

EXHIBIT 12

TO BRIEF IN SUPPORT

OF MOTION FOR

SUMMARY JUDGMENT

REDACTED VERSION

OF DOCUMENT

TO BE SEALED



CONSUMERS ENERGY COMPANY AND DTE ELECTRIC COMPANY
(PLAINTIFFS)

V.

TOSHIBA AMERICA ENERGY SYSTEMS CORPORATION
AND TOSHIBA CORPORATION
(DEFENDANTS)

United States District Court for the Eastern District of Michigan
Southern Division
Case No. 2:22-cv-10847-PDB-JJCG

Expert Report of Michael P. Emmert

June 14, 2024



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I. INTRODUCTION

1. I am Michael P. Emmert, a Senior Managing Director with Ankura Consulting Group, LLC ("Ankura"). Ankura and I were retained by Jenner & Block, LLP ("Jenner" or "Counsel"), legal counsel for Consumers Energy Company ("CEC") and DTE Electric Company ("DTE") (collectively, "Owners"), in the litigation matter of CEC and DTE v. Toshiba America Systems Energy Corporation ("TAES") and Toshiba Corporation ("Toshiba").¹ This Expert Report (the "Report") contains my expert opinions and conclusions of the financial damages to the Owners of the Ludington Pumped Storage Plant ("LPS", "Ludington", or the "Plant")² as a result of TAES's failure to complete the overhaul of Ludington in accordance with the Toshiba Engineering Procurement & Construction Contract dated October 15, 2010 (the "Contract").³
2. The Contract contains the terms by which TAES would complete the overhaul of each of the six Ludington hydroelectric pumped storage units with the final acceptance of the overhaul of all six units to be achieved by March 2020. The Owners initially agreed to pay TAES a not-to exceed total contract price of \$528.9 million for its overhaul work defined in the Contract. However, as set forth in the Owners' Complaint (the "Complaint"), the Owners contend TAES breached the Contract by failing to perform and complete its work in accordance with the Contract, not completing its work on schedule, performing defective and nonconforming work inconsistent with the warranties set forth in the Contract, and refusing or failing to repair defective and nonconforming work.
3. Based on the Owners' allegations of numerous failures by TAES to properly perform and complete the overhaul in accordance with the Contract, it is my opinion based on the Contract terms, the financial damages to Owners as a result of TAES's breach of contract total \$690.1 million.

¹ I am an expert in the quantification of breach of contract damages in the electric utility industry. Most of my 47-year professional services career has included measuring contract damages and providing expert testimony regarding contract damages for electric utility companies, equipment suppliers and others in the energy industry. I have been qualified as an expert in the subjects of damages methods and quantifications. I discuss my qualifications to provide testimony in this matter in more detail in Section II below.

² CEC owns 51% of the Ludington Plant and plant output, while DTE's share is 49%.

³ Consumers Energy Company and The Detroit Edison Company, Ludington Pumped Storage Plant Engineering, Procurement, & Construction Contract for Units 1 through 6 Turbine Generator Overhaul with Toshiba International Corporation. The Contract was executed in January 2011, effective October 15, 2010, and assigned to TAES April 1, 2015.



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II. PROFESSIONAL EXPERIENCE AND QUALIFICATIONS

4. I am a Certified Public Accountant ("CPA") licensed in the State of Illinois and hold the AICPA's Certified in Financial Forensics designation.⁴ For the past 47 years, I have provided accounting, auditing, contract damages, investigations, business, management, regulatory, information management and other consulting services to clients in a variety of industries. I graduated from Illinois State University in 1975 with a Bachelor of Science Degree in Accounting, and joined Arthur Andersen & Co., where I provided accounting, auditing, contract damages, project management, and investigative services.
5. In 1980, I participated in the formation of a new consulting organization, Peterson & Co., providing similar client services, but with a greater focus on assisting companies with dispute resolution matters, including the quantification of damages, and other business claims. After leaving Peterson, I became the Managing Partner of Ernst & Young's Global Investigations & Dispute Advisory Practice. I joined Navigant Consulting Inc., Ankura's predecessor firm, where my responsibilities primarily included providing clients contract damages, investigative, regulatory, and business consulting services.
6. Throughout my career, I have provided professional services to companies in the energy industry, including electric and gas utilities, pipeline companies, oil companies, mining companies, construction contractors, and equipment and material suppliers. In the electric utility industry, my clients include utility companies, equipment manufacturers, and fuel suppliers to whom I provide a wide array of services, including analysis of contract damages and claims consulting involving nuclear, coal, gas, hydro, wind, and electricity generation.
7. I supported the efforts of electric utilities in recovery of new plant construction costs from ratepayers, including supporting the prudence or reasonableness of billions of dollars of construction, commissioning, and start-up activities and costs. I have participated in or led the development and/or review of numerous breaches of contract damage studies, including many increased construction and operating cost analyses, as well as the quantification of lost electric sales or increased costs of electric dispatch. I have reviewed and analyzed the pricing provisions of hundreds of contracts in the electric utility industry and many other

⁴ The acronym AICPA stands for the American Institute of Certified Public Accountants, the governing body for establishing and maintaining the standards for the practice of public accounting and related services in the United States. To maintain a CPA license, I must meet annual continuing professional education requirements on subjects including accounting, financial reporting, valuation, auditing, ethics and other subjects related to the scope of issues services are provided.



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industries. Finally, I have prepared as well as evaluated financial damages claims with damages periods of over 60 years.

8. I have been qualified as an expert in the quantification of breach of contract damages, construction claims, insurance claims, and government contract claims, and other types of disputes in United States ("U.S.") federal and state courts, the U.S. Court of Federal Claims, U.S. state regulatory commissions, U.S. Federal Energy Regulatory Commission matters, and International and U.S. arbitration proceedings. I have also served as an arbitrator.
9. My experience in evaluating and quantifying complex damages studies and claims extends to hundreds of engagements beyond the electric utility industry. As an example, I was the primary damages expert responsible for the review and assessment of over \$12 billion of financial damages sustained by New York City businesses as a result of the September 11, 2001 terrorist attack. I was also retained to assist former Secretary of State Lawrence Eagleburger and the Eagleburger Commission in the investigation of insurance losses sustained by European civilians and Holocaust victims prior to and during World War II. I testified on behalf of the owners of the Trans-Alaskan Pipeline System in support of the owners' request for recovery of prudently incurred system and pump station upgrade costs.
10. I have frequently spoken about damages methodology and damages claims and was a member of the American Bar Association committee developing standards for expert witness conduct for the U.S. legal community. A copy of my curriculum vitae and a listing of my expert testimonies over the last four years is provided in Appendix 1.
11. The opinions, conclusions, and analyses presented in this Report are based on documents and information available to Ankura as of the Report date. Ankura understands that the process of discovery in this matter continues, and therefore, the contents of this Report may be updated to reflect additional information as appropriate. Appendix 2 contains a listing of the documents Ankura considered in preparing this Report. Certain calculations in this Report are performed as of an assumed trial or judgement date and will be adjusted to reflect the actual timing of those events.
12. Other members of Ankura assisting me with the development and presentation of this report include Timothy Jones, Brandon Byczynski, Claire Sowards, Gustavo Osequera, John Byrne, Brian Celeste, Ali Petrash, and Sonika Arya. Mr. Byrne has also issued an expert report in this matter, the Expert Report of Mr. John Byrne (the "Byrne Report"). The Byrne Report identifies and quantifies the durations of the delays in the completion of the overhauls. The durations of project delays are used in this Report to present liquidated



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damages.⁵ The Byrne Report also evaluated the anticipated timeline for the discharge ring extension (“DRE”) and balance of plant outage, by unit, to be performed in the future and discusses efficiencies in the TAES project management organization.

III. LUDINGTON’S OPERATIONS, VALUE TO ITS OWNERS AND THE IMPACT OF TAES’S PERFORMANCE DEFICIENCIES

13. The LPS is a hydro-electric pumped storage generating station with six hydroelectric pump turbines (i.e., the six electronic generating “units”). The LPS works as a large battery to store electricity to meet the daily peak power demands of the Owners’ customers.⁶ LPS is the largest peaking facility for both Owners.
14. The LPS units pump water from Lake Michigan to a 27-billion-gallon reservoir 300 feet above the Plant during periods of low electricity demand. The units are designed to both pump water to the reservoir and then switch their direction to receive the water when released to generate electricity during peak demand periods.⁷ Each unit generates 365 megawatts of electric power, totaling over 2,000 megawatts for sale and delivery to meet the demand of the Owners’ customers.
15. The LPS units are a key generating asset for both CEC and DTE to meet their renewable energy goals and provide substantial value to the Owners and their customers.⁸ The availability of the units to meet each Owners’ peak customer demand at a significantly reduced cost of delivery provides significant generating value directly to the Owners’ customers and the Owners. LPS’s ability to immediately deliver more than 2,000 megawatts of power when needed (such as when responding to fluctuations in supply or demand on the Owners’ systems or transmission congestion) decreases the overall cost of power to the Owners’ customers. LPS also provides capacity value when the units are available for service but not operating, by satisfying a portion of each Owners’ regulatory responsibility for maintaining sufficient available supply capacity within the Michigan and midwestern power markets. The flexibility of the LPS units – including their ability to store and rapidly

⁵ Ankura charges hourly by professional for our expert services, at rates ranging between \$275 and \$585 per hour.

⁶ <https://www.consumersenergy.com/community/sustainability/our-hometown-stories/ludington-pumped-storage-plant>

⁷ <https://www.consumersenergy.com/company/electric-generation/renewables/hydroelectric/pumped-storage-hydro-electricity>

⁸ <https://www.consumersenergy.com/community/sustainability/our-hometown-stories/ludington-pumped-storage-plant>



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deliver energy – means their importance to the Owners will grow over time with the Owners’ plans to deploy significant amounts of renewable energy.

16. CEC manages the operations of the LPS units. The six units rotate between the two Owners on a monthly basis and those assigned units are dispatched based upon that Owner’s generating portfolio, wholesale market strategy, and customer demand. The LPS units were designed and engineered by Hitachi, Ltd,⁹ which was also the supplier of the original major components installed in each unit.
17. The Owners received a 50-year Federal Energy Regulatory Commission (“FERC”) operating license for the Plant in 1969. The Plant began commercial operations in 1973. The LPS units were previously overhauled from 1987 to 1996.¹⁰ Unit 4 was overhauled in 1987 by Hitachi, while the other units were overhauled by Voith Hydro.¹¹
18. In 2007, the Owners began the process to overhaul the Plant to ensure reliable operation during an extended FERC licensing period beyond 2019. The overhaul upgrade was anticipated to add 300-megawatts of capacity to the existing 1,872-megawatt total capacity, or the equivalent of a seventh unit at the plant, for a total uprated capacity of 2,172-megawatts.
19. In January 2014, the Owners notified FERC of their intention to amend the existing FERC license for the uprated generating output they expected to realize through the unit overhauls.¹² The Owners submitted their final application in June 2017 and in June 2019, FERC issued the Owners a new license for an additional 50-years of operation, from 2019 to 2069.¹³
20. The overhaul project objectives were memorialized in the Owners’ contemporaneous documents such as the Project Charter and incorporated into the Conformed Contract Specifications (“CCS”) of the Contract.^{14,15} The LPS Overhaul Project Charter, included the following objectives:
 - Capacity and Efficiency Increases:
 - 15% generation capacity increase (50 megawatt per unit)

⁹ CEC-01339056, p. 2-3, 6.

¹⁰ CEC-01339056, p. 81-82. CEC-01144493, p. 2.

¹¹ CEC-01165520, p. 2.

¹² CEC-01400387.

¹³ <https://www.consumersenergy.com/company/electric-generation/renewables/hydroelectric/pumped-storage-hydro-electricity/ludington-relicensing>.

¹⁴ CEC-01166252. See also, CEC-00936244 for an Executive Summary memorializing the overhaul objectives.

¹⁵ See, e.g., Conformed Contract Specification Part Two, Technical Requirements (“TR”) ¶¶ 1.0, 1.7, 3.0.



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- 5% efficiency improvement from installation of a new runner
- Improved Reliability, through:
 - Increased operating life of thrust bearings
 - Reduced pump/turbine cavitation
 - Repaired crown cover cracking
 - Increased excitation system reliability
 - Reduced generator circuit breaker maintenance
- Extended operating cycles between outages:
 - Extended periodic outage cycle from two years to three years
 - Operate for a 30-year service life before the next major overhaul¹⁶

Additionally, post-overhaul, the LPS units were to generate electricity at 77% efficiency (pump electricity usage v. generation), experience periodic outages of no more than 20 days, incur random outages at a rate of 1% or less, and reduce the time required to fill the reservoir to 9.5 hours.¹⁷

21. The Project Charter also identified critical components to be addressed during the overhaul of each unit, including the pump turbine runner, stator and core, rotor, wicket gates, thrust bearings, plant electrical systems (breakers, switches, static exciters/voltage regulators), and plant infrastructure to support the overhaul work. The Owners improved much of the site infrastructure in preparation for the overhaul, such as the installation of a new gantry crane, construction of two new fabrication shops on-site, and the installation of a dock to receive plant components at the site via barge.

IV. DISCUSSION OF THE CONTRACT

22. The Owners and TAES agreed to and executed the Contract in January 2011, effective October 15, 2010. The original terms of the Contract set forth the scope of work to be performed, the schedule for work completion, the performance specifications for the upgraded Plant, price and payment terms, and numerous other provisions found in major equipment engineering, procurement, and construction ("EPC") contracts. Examples of major Contract provisions initially presented in the EPC contract include:

¹⁶ CEC-01166252.

¹⁷ CEC-01166252 and CEC-01144493.



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- A \$480 million base contract price consisting of a firm fixed price component, adjustable fixed price component, and reimbursable craft labor component resulting in a not-to-exceed price of \$529 million;¹⁸
 - Project duration: 9.2 years (January 2011 through March 2020);
 - Upgraded Plant capabilities and efficiency: 50 megawatt per unit increase to capacity (increasing total Plant capacity 300 MWs from approximately 1,900 megawatts to approximately 2,200 megawatts);
 - Reduced outage frequency: One periodic outage per unit every three years;
 - Extended Plant service life: 30-years before the need for another major unit overhaul.¹⁹
23. In essence, the TAES Contract included the activities and dollar values to redesign, fabricate, remove, and install major turbine and other components without modification to overall unit configurations.
24. Further, the Contract included specific per unit terms that generally accounted for the sequence in which the units would be overhauled. Each unit had its own overhaul schedule that contained specific completion dates, including the Owners' final acceptance of TAES's overhaul work for each individual unit. The original Contract's terms included completion of the Plant overhaul with final Owners' acceptance of the sixth unit overhaul work in March 2020.
25. However, although work began on October 15, 2010, TAES never completed its work under the Contract. As early as December 2015, after Unit Interim Acceptance ("UIA") of the first unit, TAES's financial analyses illustrate it was projecting a \$60 million downward impact to its projected profit margin.²⁰ TAES halted most work and demobilized from the Plant in July 2022, leaving work incomplete including work to correct unit operating defects. Neither at that time, or as of the date of this Report, have the Owners provided Unit Final Acceptance ("UFA") to TAES for Units 6, 1 and 3. Numerous identified defects subject to resolution under the warranty provisions of the Contract have yet to be addressed by TAES. Consequently, these TAES caused operating defects will continue to degrade unit operating conditions to varying degrees of severity, necessitating continuous investigation, repair, maintenance, and ultimate replacement of unit components.

¹⁸ The Contract also included an additional \$54 million available to TAES as a bonus payment if TAES met the bonus conditions of the Contract.

¹⁹ Conformed Contract Specification Part Two, Technical Requirements ("TR") ¶1.7. Certain provisions from the Contract were amended through Contract Change Orders.

²⁰ TAES1337845.



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26. The Contract also included provisions outlining the warranties to be provided by TAES including specific warranties for defects related to all work, and a warranty related to cavitations of the pump-turbine runner. The Contract contains a separate provision for assessing liquidated damages for delays between target and actual UIA dates and any failures to meet pump-turbine efficiency guarantees. The Contract also provides total and per unit liability limits based upon the unit completion sequence and the total contract price for each unit.

A. Delays to Completion of the Contract

27. The original Contract terms called for TAES to complete the overhaul of each unit in 251 days from the actual outage start date to the date of UIA. Based on TAES's as-planned schedule, the UIA date for the sixth and final unit was to be in June 2019.²¹ The UIA date is relevant to the Owners and their customers as at the time of UIA the unit may begin initial operations and progress toward power production capability. However, TAES failed to achieve the completion of the overhaul for any unit in the scheduled 251 days.
28. UIA was achieved March 12, 2015 for the first unit, Unit 2, after a delay of 235 days, resulting in a total of 486 days Unit 2 was unavailable to service customers. UIA for the second unit, Unit 4, was achieved on May 27, 2016 after 431 total outage days, a delay of 180 days.²²
29. Change Order #9 was executed on February 1, 2017. This change order extended the overhaul outage schedule for achievement of UIA for each of the final four units to 330 days; an increase of 79 days or 31.5% from the Contracted schedule.²³ That change pushed the target UIA date for the final unit overhaul to April 9, 2020, nearly one-year later than the original Contract completion date.²⁴ However, TAES failed to meet any of its original or amended completion dates for any unit, resulting in a total delay of over 1,361 days during which one or more units were unavailable to deliver power or capacity coverage in accordance with the Contract. Table 1 summarizes the durations that the units were originally intended to be out of service and the actual overhaul duration days.

²¹ Contract, Section III, "Description of Work".

²² Byrne Report, Section VIII.

²³ Change Order #9 is dated February 1, 2017. A general description of the change order process is presented in subsection B immediately following this overview of the overhaul delays.

²⁴ Byrne Report, Section IX.



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Table 1: Outage Durations to Unit Interim Acceptance²⁵

Units	Outage Duration to Unit Interim Acceptance (Days)		
	TAES Contract	As of CCO 9	Actual
Unit 2	251	251	486
Unit 4	251	251	431
Unit 5	251	330	404
Unit 6	251	330	410
Unit 1	251	330	399
Unit 3	251	330	1,053
Total	1,506	1,822	3,183

30. Even after each unit achieved UIA, the Owners and their customers continued to experience more frequent and longer-duration outages. These additional delays were caused by TAES's defective overhaul work, as extensions of planned outages were necessary to resolve new or reoccurring operating challenges with defective components supplied by TAES.
31. Projects of this magnitude and complexity require robust, industry-leading project controls to ensure the project is moving forward in accordance with the contractor's committed plan, minimizing inefficiencies and errors, maintaining efficient and balanced short-term and long-term staffing levels and flexibility to align work crews with those areas with the most immediate and critical demand for project resources to minimize delays and meet project schedule. Consistent delays of this magnitude reflect TAES's challenge with implementing an effective project management process and projects controls as well as managing the diversion of craft labor between overhaul activities and labor resources necessary to complete post UIA repairs for TAES's defective work on other units.
32. The Byrne Report contains a detailed study of the completion delays of each unit with particular focus on the last three units. In summary, the Byrne Report includes a per unit description and discussion of the causes of each unit's delays. The Byrne report also contains conclusions concerning the deficiencies in TAES's project management,

²⁵ CCO 9 did not change the Unit 2 and Unit 4 Contract outage duration of 251 days.



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scheduling, project controls, and other construction practices that contributed to overhaul delays as well as other deficiencies in TAES's project performance.²⁶

B. Change Orders Issued for the Contract

33. The Contract also contained provisions to amend the Contract terms based on changes for unplanned or unforeseen conditions experienced during the outage by either the Owners or TAES.²⁷ Project change notices ("PCNs") were issued between the parties to define, schedule, and provide compensation for changed and new scopes of work to be performed during the overhauls. These PCNs were incorporated into formal change orders which modified the base contract value, the firm fixed price, the reimbursable unionized craft labor, and the not-to-exceed price under the Contract.
34. Throughout the unit overhauls, ten change orders were executed between the parties. Through Change Order #8, the total firm fixed price of the contract increased \$20 million to \$549.5 million. The sequence in which the units were to be overhauled was also modified through this change order.²⁸
35. Subsequently, Change Order #9, dated February 1, 2017, altered the Contract terms with respect to reimbursements to TAES for union craft labor and time and materials pricing provisions of the Contract. Change Order #9 resulted in a total not-to-exceed price of \$558.9 million.²⁹
36. Change Order #9 also revised the Contract's limitation of liability terms. Under Change Order #9, with certain exceptions, TAES's limitation of liability is the sum of the total fixed price (for all units including change orders) plus the maximum bonus amounts (for all units). The maximum liability per unit for the first three units overhauled is two-times the sum of the total unit fixed price, change orders, and bonus. The per unit maximum for the last three units is the sum of the unit fixed price, change orders, and bonus. The limit for liquidated damages was also addressed, with the limit for the first three units being 15% of the unit total fixed price and 25% in total when including liquidated damages for performance guaranties. The liquidated damages for the final three units are limited to 10% of the unit

²⁶ I relied on the opinions, conclusions, and underlying work presented in the Byrne Expert Report during the development of my opinions and conclusions contained herein and the preparation of this Report.

²⁷ Contract, Section I, "Agreement", "3. Changes in the Work and Extra Work."

²⁸ Change Order #2, dated July 18, 2013, revised the sequence of the unit overhauls and placing Unit 2 as the first unit to be overhauled. Change Order #6 re-sequenced Units 1 and 6 to make Units 6 the fourth unit to be overhauled and Unit 1 the final unit. Change Order #10 re-sequenced Units 1 and 3 to make Unit 1 the fifth unit and Unit #3 the final unit to be overhauled.

²⁹ Change Order #9 also included bonuses available to TAES which would further increase the value of the Contract.



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total fixed price for lateness, and 20% of the unit total when including liquidated damages for performance guarantees. Change Order #9 also documented the agreement of the liquidated damages amounts resulting from TAES's failure to complete the overhauls of Units 2 and 4 in accordance with each unit's final as-planned schedule.

37. Change Order #10 increased the Contract price to \$559.1 million and extended the final overhaul completion date for all units from March to December 2020. Exhibit A provides a summary of the change orders executed and the changes to the pricing for each unit and to the total Contract value. Additional Potential Change Notices ("PCOs") were issued after Change Order #10, however, these PCOs remain outstanding and were not formalized into a change order.

V. OVERVIEW OF OPERATING DEFICIENCIES EXPERIENCED AT LPS RESULTING FROM TAES'S OVERHAULS

38. TAES's failure to complete the overhaul in accordance with the Contract terms has resulted in financial damages to the Owners and their customers. Major components at Ludington suffer from defects that require hundreds of millions of dollars to remedy. In addition, because of the delays in completing the overhaul contract for each Ludington unit, Ludington's generating capacity was not available to the Owners to continue meeting either customer demand or their regulatory capacity obligations at the lower costs the Owners would have experienced had the Ludington units been available. Therefore, the Owners lost the opportunity to earn revenues for each additional day TAES failed to complete the overhaul of each unit.³⁰
39. In addition, the repeated removal of individual units from service to inspect for and repair TAES's defective overhaul work has reduced the number of hours and days the Ludington units are available to earn capacity revenues and generate electricity for sale to customers. The Owners and their customers have experienced additional costs and expenses to cure and monitor TAES's defective work.
40. Due to TAES's faulty overhaul work, the LPS units have experienced operating problems and performance issues common to all units in addition to issues unique to each unit. The Complaint in this matter contains a description of the alleged deficiencies and shortcomings

³⁰ The total financial losses the Owners have experienced as a result of the TAES overhaul performance are greater than the financial damages presented in this Report. As an example, the availability of the LPS units to either generate or be available for power generation has been diminished because of defects associated with the TAES overhaul.



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of TAES's contract performance including its unit redesigns, fabrication, installation, unit re-assembly, and warranty repair efforts. These TAES deficiencies are addressed in reports of several technical experts.³¹ This Report presents the Owners' financial damages that flow from TAES's failure to perform or complete its overhaul work in accordance with the Contract. The major LPS unit components most seriously affected by TAES's performance failures are discussed below.³²

41. The Owners' process for addressing and managing the specific issues that stem from TAES's performance failures begins with the Owners' contemporaneous tracking of punch list items for incomplete or unsatisfactory work including unaddressed requests for information ("RFI"), corrective actions not performed, missing technical content and quality control documentation, and other items TAES failed to complete under the Contract. The issues are also identified in the Owners' contemporaneous tracking of non-conformance reports ("NCRs"). The Byrne Report provides additional conclusions regarding the status and development of each unit's punch list and certain NCRs.
42. These contemporaneous records form the basis for the Owners' Budgetary Scoping Documents ("BSDs"). The BSDs were established to manage the investigation and repair of issues across the LPS units. BSDs have been established based upon the issues experienced by the units. The BSDs are linked to the NCRs including those associated with the DRE (BSD-012), shaft seals (BSD-008), pony motors (BSD-002), MOD switches (BSD-027), and wicket gates (BSD-016 and BSD-017), as examples.³³ Each issue discussed in this section has been memorialized by the Owners in a specific BSD. Ankura has quantified the damages primarily based on the work necessary to address the TAES performance deficiencies by BSD.

A. Discharge Ring Extensions

43. One of the most significant issues stemming from TAES's overhauls is cracking and cavitation erosion on the discharge ring ("DR") and DRE. The DRs and DREs are a key part

³¹ I discussed the relationship of the TAES overhaul performance (design, fabrication and installation) and the failure of the units to achieve specified Contract performance levels with technical and engineering experts including discussions of specific unit defects, the deficiencies of the TAES design and overhaul activities and other issues contributing to the defective work and under performance of the LPS units. See Appendix 2 for a listing of these experts. I also observed the DRE cracks, cavitation erosion, and other defective TAES supplied equipment during several plant and individual unit tours.

³² Ankura had numerous, in-depth conversations with Owner and LPS personnel to understand the operating limitations, repair requirements and other impacts of the TAES overhaul effort affecting the operations of each unit.

³³ See CEC-01586580 for a list of BSDs and corresponding NCRs.



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of the water passageways that contain water moving through the hydroelectric units. The DRs sit near the bottom of each pump-turbine runner, which is the rotating component that spins in pumping and generating modes. The DRE was a new component designed, manufactured, and installed in each unit by TAES to modify the existing DR. The DREs were new components added by TAES to each unit to accommodate TAES's design for a larger runner to produce the expected output of each unit.

44. TAES was responsible for the design, materials selection, procurement, and manufacturing of the DRE as well as the installation once delivered to the Plant. Inspections of the DRs and DREs conducted since 2019 have identified worsening degradation affecting the DR and/or DREs of each unit. The DRs in Units 2 and 4 have experienced significant loss of material due to severe cavitation erosion. Inspections have revealed deep cavities in those units in the area where the DR meets the DRE that are nearly as deep as the thickness of the DRE. The DREs in all of the units have experienced cracking. The Owners rejected the DRE that TAES initially attempted to install in Unit 3 because of cracking that developed during the installation. TAES designed and installed a new DRE in Unit 3, but it has not provided an overall repair or replacement solution for the degradation affecting the other DRs and DREs.
45. The Owners have repeatedly notified TAES of the continued cracking issues with the DREs in Units 1, 2, 4, 5, and 6 and material loss observed for the DREs in Units 2 and 4. However, TAES has not provided any solutions, repairs, replacement components, or other support to permanently address the damage observed in those units to meet its obligations under the Contract. Consequently, these five units continue to contain defective work and fail to meet the requirements of Contract. As a result, the Owners have engaged Voith Hydro to re-design, manufacture, deliver, and install replacement DREs at the Plant for Units 2 and 4, along with the monitoring and potential replacement of the other DREs based on the condition of those units.³⁴

B. Main Shaft Seal System

46. The main shaft seal systems in each unit are intended to prevent water from escaping from the turbines into the dry areas of the plant. The shaft seals have suffered multiple failures and leaks since the completion of the first overhaul and re-start of Unit 2 in May 2016. TAES

³⁴ See Section VI for an introduction to the Owners' retention of Voith Hydro.



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has re-designed and retrofitted the shaft seals to attempt to address the issues in the system including adding a continuous air injection system, replacements and modifications to the O-ring and X-ring seals, cover ring reinforcement shim, wholesale replacement of both air and water regulators, upsizing the air piping to support a higher continuous flow of air (in attempt to overcome uncontrolled air leakage), and changing from a differential pressure switch to high and low switches.³⁵

47. These retrofits included adding another complete system to the shaft seal. A compressed air system provides air pressure to the seal to supplement the springs originally intended to maintain the sealing function. The air system is an active system which has itself experienced a number of failures. TAES has also modified and/or replaced numerous other components of the shaft seal system resulting from failures or performance issues. However, problems including leaks from the turbine have continued and have resulted in fouling systems (e.g., turbine guide bearing oil reservoir) and resulting in unplanned outages and increased maintenance activities well beyond the level and rates called for under the Contract.

C. Motor-Operated Disconnect Switches

48. To refill the Plant's reservoir after each period of power generation, the operations of the units are reversed, and lake water is pumped to the reservoir. Each non-lead unit at LPS (Units 2, 3, 4, and 5) relies on motor-operated disconnect switches ("MODS") to connect the unit to the starting bus for initial operation in pump mode.³⁶ These MODS are labeled as "x15" where x is the unit number. Simply, the MODS creates the connection between the unit's generator/motor to the starting bus in order to connect it to the lead unit for pumping. Without the switches, the units are unable to connect to the lead unit and restricted to only generating electricity. A fifth MODS (MODS-105) is used to connect and separate the starting bus halves from each other.
49. The SpecFab MOD switches installed by TAES do not meet design requirements for the units, are not reliable, and are not expected to meet the 30-year service life requirement. The MODS have and continue to experience operational issues requiring regular repair, while others have completely failed and do not allow the units to switch to pumping mode.

³⁵ CEC-01313004.

³⁶ Consumers Energy Company, LPS Major Overhaul Project, Bid Scoping Document: Motor-Operated Disconnect (MOD) 315 Repair/Replacement, PH-00119-BSD-027, Revision 0.0, September 27, 2023, p. 3.



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When the number of units available as pumps is reduced, the other units must operate longer to fill the reservoir, resulting in less efficient pumping operation and higher costs, along with increased degradation of the DREs in those units available to pump due to the longer pumping time.^{37,38}

50. TAES replaced MODS 105 under warranty in 2021. TAES has failed to replace the MODS in Units 2, 3, 4, & 5, which will all need to be regularly repaired until replacement switches are designed, procured, and installed.³⁹ The Owners have contracted with Novolecs to supply the replacement switches and Newkirk to perform the installation of the switches.⁴⁰

D. Unit Excitation PPT Supply Wiring

51. The excitation power supply wiring between the generator circuit breaker and the static excitation system in each of the LPS units needs to be redesigned, remanufactured, and replaced. The power supply cabling supplied by TAES is insufficient to meet protection requirements imposed by applicable electrical codes and TAES's design has not been substantiated by any analysis supporting the safety and suitability to support 30-years of operation. The Owner and Voith are working to replace the undersized cabling with electrical busses that will require substantial engineering to support the operating expectations for the units.

E. Unit 5 Turbine Runner Cracking

52. During inspections of the Unit 5 DRE for potential cavitation erosion, the Owners and their contractors found a crack in one blade of the unit's turbine runner. This is a new operating challenge stemming from TAES's design and fabrication of the new and larger runner. Each unit has the same runner design and manufacturing and assembly process as Unit 5. Consequently, the other units face the same potential risk of runner degradation and the need for repair.
53. As of the date of this Report, the Owners continue to evaluate the cause and magnitude of the runner damage. The Owners performed interim repairs to the Unit 5 runner with the assistance of Voith during the Spring 2024 outage.

³⁷ Consumers Energy Company, LPS Major Overhaul Project, Bid Scoping Document: Motor-Operated Disconnect (MOD) 315 Repair/Replacement, PH-00119-BSD-027, Revision 0.0, September 27, 2023, p. 3-4.

³⁸ Consumers Energy Company, LPS Major Overhaul Project, Bid Scoping Document: Motor-Operated Disconnect (MOD) 315 Repair/Replacement, PH-00119-BSD-027, Revision 0.0, September 27, 2023.

³⁹ Consumers Energy Company, LPS Major Overhaul Project, Bid Scoping Document: Motor-Operated Disconnect (MOD) 315 Repair/Replacement, PH-00119-BSD-027, Revision 0.0, September 27, 2023, p. 3.

⁴⁰ CEC-01419628



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F. Pony Motors

54. Units 1 and 6 are configured as the lead units for the Plant and are used to start other non-lead units (Units 2, 3, 4, and 5) in pumping mode. Lead Units 1 and 6 are each equipped with a pony motor that enables them to be started as pumps themselves. When starting one of the lead units as a pump, the pony motor is energized and in turn provides the energy to propel the lead unit to the correct speed in order to sync to the grid in pumping mode.
55. As part of the overhaul, TAES was to evaluate the pony motors and recommend maintenance necessary to extend their service life 30 years based on their expected duty cycle.⁴¹ TAES was also required to perform finite element analysis ("FEA") on rotating and other high stressed components as part of the generator-motor refurbishment, including the pony motor rotors.⁴² TAES was also to rewind the pony motor rotors.⁴³
56. During the overhaul of Units 1 and 6, cracks were observed in the pony motors and repaired by TAES during the course of those overhauls. In May 2020, after TAES completed its overhaul of Unit 1, the Owners identified fretting and cracking in the Unit 1 pony motor,⁴⁴ and similar issues were identified in the Unit 6 pony motor during a June 2022 outage.⁴⁵ As a result, the Unit 1 pony motor has been taken out of service and is not currently able to start in pump mode without use of Unit 6 as a lead unit. Accordingly, only the Unit 6 pony motor is currently available.
57. Due to these pony motor issues, the Owners are now in the position of having to perform additional outages to address the cracking of the pony motor rotors that should have been addressed during the overhaul of those units. At a minimum, the existing pony motors will be required to be rewound again during an extended outage to address the pony motor cracking.

G. Other Component Issues

58. Other components affected by defects include:
 - a) The ineffective operation of the high-pressure oil system and related issues with the thrust bearing system; faulty design of the lower guide bearing oil seals; and, cracks in the generator air covers; and,

⁴¹ Conformed Contract Specification, Part Two Technical Specifications ("TS"), EE-30200.1 ¶¶ 1.2.14 and 4.18.

⁴² TS EE-30200.1 ¶ 1.2.5.

⁴³ TS EE-30200.1 ¶¶ 4.18, 4.18.1.5.

⁴⁴ NCR-00775.

⁴⁵ NCR-00779.



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- b) Ineffective design of the wicket gate thrust liners and bushings, linkage fretting, and greaseless bushings;
59. The below figure summarizes the issues experienced across the LPS units after TAES's overhauls.

Table 2: Issues by Unit

Issue	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
BSD-002, Pony Motor Rotor Cracking & Fretting	X	--	--	--	--	X
BSD-004, Unit Excitation System Issues	X	X	X	X	X	X
BSD-005, Unit Excitation PPT Supply Wiring	X	X	X	X	X	X
BSD-006, Pumping Pole Service Life & Rating Concern	X	X	X	X	X	X
BSD-007, Generator Air Cover Cracking	X	X	X	X	X	X
BSD-008, Main Shaft Seal	X	X	X	X	X	X
BSD-009, Turbine Guide Bearing Damages & Oil Heaters	X	X	X	X	X	X
BSD-010, High Pressure Oil System/Thrust Bearing Service Life	X	X	X	X	X	X
BSD-012, DRE Cracking and Cavitation and Other Components	X	X	X	X	X	X
BSD-013, Oil Leak from Lower Generator Guide Bearing Seal	X	X	X	X	X	X
BSD-016, Wicket Gate Thrust Liners/Bushings	X	X	X	X	X	X
BSD-017, Wicket Gate Linkage Fretting / Greaseless Bushing Design	X	X	X	X	X	X
BSD-018, Unit Brake Track Machining and Shoe Replacement	X	X	X	X	X	X
BSD-027, Motor Operated Disconnects	--	X	X	X	X	--
BSD-028, Thrust Bearing Oil Cooler Headers and Fouling	X	X	X	X	X	X
BSD-038, Failed Generator Air Coolers	X	X	X	X	X	X

VI. OWNERS' RETENTION OF VOITH HYDRO

60. Due to TAES's lack of performance during attempts to complete the overhaul of Unit 3 in late 2020, CEC initiated a process to evaluate and engage another contractor in the event TAES was unable to complete Unit 3 or perform repair work to correct deficiencies. CEC issued a Request for Proposal (RFP) to other major hydroelectric equipment and service suppliers: American Hydro Corporation, GE Renewable Energy, Andritz Hydro Corporation, and Voith Hydro ("Voith"). The bid evaluation team ultimately selected Voith.⁴⁶
61. As of August 13, 2021, the Voith retention was memorialized via a Contract for Major Project and General Services, Hydro General Services and Equipment between Voith, as the Contractor, and Consumers Energy Company, as the Owner (the "Voith Contract").⁴⁷ The Voith Contract provides that any work agreed upon between the parties is to be executed through Engineering, Procurement, and Construction Scopes of Work ("SOW") or purchase orders authorized by the Owners.⁴⁸ The Voith Contract set forth specific pricing terms to be paid on a time and materials basis in Attachment 006 to the Voith Contract including rates

⁴⁶ CEC-01215119.

⁴⁷ CEC-01208979.

⁴⁸ CEC-01208979, Section 005213.



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for any project management personnel utilized.⁴⁹ As of the date of this Report, the Owners have issued five SOWs under which Voith has been executing its work. Each of the SOWs are discussed in greater detail in the sections below.

VII. OVERVIEW OF THE FINANCIAL DAMAGES QUANTIFICATION METHODOLOGY

62. Ankura conducted its analysis and quantification of financial damages in this case using a standard, well accepted, and tested methodology for quantifying breach of contract damages. The methodology can generally be summarized as comparing the Owner's position two scenarios: (a) the "would have been" or "non-breach" scenario, which estimates the Owners' financial outcomes assuming TAES had fully completed its contractual obligations; and (b) the "actual" or "breach" scenario, which is an evaluation and quantification of the Owners' financial outcomes resulting from the deficiencies in TAES's work.
63. One objective of following this methodology is to develop financial damage amounts to a reasonable degree of certainty, both to the amount of damages and to the linkage of the categories and dollar value of damages to the defendant's alleged acts (i.e., losses identified and damages claimed are to be linked to the cause of the loss). In addition, the methodology should ensure that necessary assumptions are based on appropriate and reliable source data and information, are the subject of objective analysis and critique, and are consistent with case facts and evidence.
64. A proper damages study and claim for damages is generally constructed in the following manner:
- a) Determine if plaintiff's damages could reasonably be expected to have resulted from the defendant's alleged actions, including the evaluation of other factors that may have caused, contributed to, or exacerbated the plaintiffs' damages;
 - b) Identify and evaluate the available and reliable data and information (including the testing of data sources for applicability, accuracy, and consistency) on which to rely;
 - c) Develop reliable, supported, and objectively tested input assumptions necessary for determining damages (using the data and information identified and tested);
 - d) Construct financial damages models to accumulate actual or breach scenario costs, future cost estimates, and other financial impacts, as well as models for estimating the

⁴⁹ The pricing terms set forth in the Voith Contract have been superseded by Contract Change Order dated May 24, 2024 (CEC-01590376).



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non-breach costs and other financial benefits that would have been realized had TAES completed the overhaul in accordance with the Contract;

- e) Compare the results of the financial models to determine the amount of damages; and,
- f) Validate the damages quantified and the results of the financial models to determine the reasonableness of any damages quantified.

Ankura followed this methodology when quantifying the damages the Owners have experienced and will experience as a result of TAES' breach of the Contract.

65. One part of the overall financial loss and damages quantification methodology was the analysis of the numerous delays that occurred during the overhauls. The Byrne Report presents a detailed study and analysis of the duration and causes for the duration of the overhauls extending beyond the as-planned schedule TAES included as part of the Contract. The Byrne Report also discusses the reasonableness of the current schedules the Owners and their contractors have prepared for the upcoming component replacement work as well as the outage durations that the Plant will experience in the future to correct TAES's defective work. The Byrne Report also identifies numerous deficiencies in TAES's contract and project management practices that contributed to the overhaul performance shortfalls, cost overruns, and delays in completing each unit.

A. The Financial Damages Quantification Process

66. To estimate the damages presented in this Report, we undertook multi-step studies consistent with the loss methodology outlined above. The work generally included:
- a) The development of a detailed understanding of the issues underlying the damages experienced by the Owners;
 - b) The study of the Owners' financial reporting, accounting, project management, and other company systems and practices to evaluate the sources from which information and data could be obtained;
 - c) The identification and quantification of the actual losses that Owners experienced as a result of TAES's alleged breach of the Contract (the breach study);
 - d) The development of the estimated costs that Owners would have incurred had TAES performed under the Contract (the non-breach study); and,
 - e) The presentation of the increased costs and expenses and other Owners' damages.
67. The studies and work described herein were performed in an iterative manner as requested data and information were obtained, tested, and verified as reliable for loss and damages



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quantification purposes. Examples of the knowledge-gathering activities Ankura undertook during the damages quantification process included:

- a) Meeting with the Owners' personnel to discuss the facts and circumstances underlying the financial damages the Owners have experienced;
 - b) Understanding the actions taken by Owners in response to TAES's alleged failure to complete its responsibilities under the terms of the Contract;
 - c) Reviewing information maintained for LPS including accounting, Plant project management, operational, financial, and other documents and data prepared by the Owners in the normal course of business;
 - d) Reviewing and testing the relevant sources of data and information that Ankura would rely on;
 - e) Reviewing the Owners' documents and information developed to account for the costs being incurred in response to TAES's breach; and,
 - f) Touring the Plant and meeting with project management, engineers, plant managers, operators, and other LPS personnel.
68. Our work included meeting with knowledgeable LPS personnel responsible for the management, operation, and engineering for the units. We also met repeatedly with members of the accounting, power production and systems planning, contracts, and other functions at CEC and DTE. People with whom we had discussions include: Kris Koster, Dave Thornock, Jason Durand, Chad Whitman, Jerry Kostielney, Sri Madapatti, Sara Walz, Erika Ward, Gennie Eva, Cari Hurt, Chantel Dawson, Crystal Hebert, along with numerous other CEC and DTE personnel. We also met with members of Voith Hydro and experts retained in this matter. A listing of the individuals with whom Ankura met in preparation of this Report is contained in Appendix 2.
69. Ankura also reviewed Project documents from TAES's overhauls, examples of which include: LPS Project Monthly Reports, TAES's earned value reports for EPM and overhaul activities, NCR and RFI logs, issues lists for repairs, and project cost data reported in SAP, amongst others. Additionally, Ankura reviewed documentation related to Voith's scope of work including contracts, SOWs, invoices, estimate proposals, and organizational charts, amongst other documents. Appendix 2 provides a listing of the documents the members of Ankura considered to quantify the damages in this matter. Finally, Ankura reviewed certain case related documents, including filings by each party and deposition transcripts.



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B. Ankura's Review of the Costs and Expenses Incurred

70. Ankura studied the actual costs incurred by the Owners to perform the overhauls, to repair areas of TAES's deficient performance to date, and to prepare for the major repair efforts the Owners have committed to undertake and for which planning has begun. The majority of these studies were focused on the project and financial records of CEC, as the Owner responsible for the day-to-day operation of the Plant, including primary responsibility for managing the Contract, with input and coordination from DTE. CEC provided Ankura access to its financial books and records for all years studied, including CEC's SAP general ledger system; CEC's PowerPlan asset ledger, as well as supporting project documentation, reports, data, and access to plant operators and project management personnel.
71. The financial, accounting, and other business and transactional information was obtained from the same practices, procedures, and systems used by the Owners in the normal course of business. These reporting practices and systems are relied on to regularly report operating revenues, operating costs and expenses, and capital investments in financial statements, management reports, and third-party financial disclosures, including disclosures to the Federal Energy Regulatory Commission, the Michigan Public Service Commission, other regulatory and public agencies, the financial markets, and other stakeholders.
72. Importantly, a project account -- regulatory asset account WBS PH-00009 -- was established by CEC to specifically account for the cost and expenses to be incurred during TAES's overhauls. Within PH-00009, individual unit work orders and sub-orders (amongst other work breakdown structures) were established to capture, monitor, and control costs and expenses as incurred.
73. During the period of 2012 through 2022 the Owners paid TAES over \$500 million to complete its Contract responsibilities. In total, the Owners have spent more than \$700 million, including the Owners' incurred internal costs and expenses, to prepare for the overhauls as well as amounts paid to outside engineering and other advisors supporting Owners' personnel.
74. Absent repairs to the Plant and because of the magnitude and breadth of TAES's deficient performance, the Owners will not recognize the value of their total investment. To the contrary, the Owners will spend hundreds of millions of dollars during the coming years to continue to investigate the operating issues within each unit, perform interim repairs,

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engineer long-term solutions, and repair and replace major systems and components to ensure the units will operate consistent with the operating parameters included in the Contract.

75. The costs and expenses to correct or finish TAES's non-performance were also initially recorded to PH-00009. However, as the Owners began to plan for the complete repair and replacement of numerous deficient components and equipment supplied by TAES, including the DRs and DREs of Units 2 and 4, the Owners established a separate account, WBS PH-00119, to track the repair and replacement costs and expenses. To account for all past and future maintenance and replacement costs and expenses in one account, the repair and replacement costs and expenses previously recorded in PH-00009 were transferred to PH-00119.⁵⁰
76. Ankura reviewed and analyzed the data provided for the regulatory asset account (PH-00009), capital project (PH-00119), and major maintenance (O&M) projects (PH-800088), and conducted multiple discussions with the Owners' accounting, project, and other personnel regarding specific transactions and the cost control policies and procedures followed. Ankura determined the information formed a reasonable basis upon which to prepare our cost analyses and cost estimates based on this review, the sources of data provided from the Owners' contemporaneous reporting systems, and our conversations with the Owners' personnel.
77. The amounts reported to PH-00009 and PH-00119 form the foundation for Ankura's damages analysis for amounts paid and incurred. During Ankura's study of the Owners' damages, we excluded any amounts that were not tied to the alleged deficiencies in TAES's performance to properly value the increased costs the Owners would not have incurred had TAES performed in accordance with the Contract specifications.
78. The actual costs TAES incurred to perform the overhaul work is currently not known as sufficient information on that subject has not been provided during the discovery phase of this litigation to date. I understand that TAES was recently required by the Court to produce additional and further detailed information about its costs and expenses, which Ankura will

⁵⁰ WBS PH-80088 also tracks operations and maintenance amounts supporting the work performed to correct TAES's non-performance.



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review when provided.⁵¹ TAES's actual cost information may support additional analyses and my consideration of an amendment to this Report.

VIII. SUMMARY OF THE OWNERS' FINANCIAL DAMAGES

79. The financial damages the Owners have and will continue to experience as a result of TAES's failure to complete their overhauls in accordance with the Contract are presented by unit in Table 3. The damages in this table reflect escalation of the damages components to the year amounts would be expended. The damages period encompasses the years from 2017 through 2053. The June 2017 start to the damages period is based on our study of increased maintenance and repairs necessitated by TAES's defective performance. The 2053 ending date represents the 30-year period of operation that was provided for in the Contract.

Table 3: Nominal Financial Damages by Unit⁵²

Unit	Total Damages
Unit 4	\$ 221,526,065
Unit 3	89,924,715
Unit 2	218,577,563
Unit 1	86,177,955
Unit 5	104,441,857
Unit 6	112,960,095
Total	\$ 833,608,249

80. The financial damages have been quantified by the major areas of TAES's deficiencies that result in the need for the Owners to undertake the repairs in each unit. In addition, the financial damages are based on the assumptions and quantification methodologies presented in this Report and supporting exhibits. The damages are founded on the Owners' study and evaluation of the DRs and DREs and other key components in each LPS unit. The Owners have concluded that it is necessary to replace the Unit 4 and Unit 2 DR/DREs and to undertake repairs and replacements of other Toshiba-installed components in those

⁵¹ TAES's billing process was to request payments based on the earned value of overhaul work performed using estimated overhaul craft labor hours, not the actual hours and costs TAES incurred to complete the overhaul. This lack of actual cost and expense data by major WBS activity did not provide the Owners' insight or the ability to timely monitor actual project performance in comparison to the actual effort that would ultimately be necessary to complete Contract milestones in accordance with Contract completion.

⁵² The damages presented herein do not include the costs and expenses (legal fees, expert fees, etc.) associated with this litigation, which are referred to in Section XV of this Report. See Exhibit B.

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units and others.⁵³ The Owners have committed to this course of action, including obtaining approval from their respective managements, and actively preparing with Voith to undertake the approved scopes of work.

81. During the replacement of the DR and DREs, the Owners will also repair or replace other critical operating components of the units that TAES failed to adequately refurbish or replace during the overhauls. The major components needing repair, such as wicket gate operating mechanisms, MOD switches, pony motors and their related operating deficiencies, were previously discussed in Section V of this Report.
82. For the remaining units, the Owners presently do not plan to replace the DREs, but due to the progressing damage and other defects will, at a minimum, annually monitor the operating condition of each unit in the area of DR/DRE and bottom of the runner for the balance of each unit's remaining useful life. The Owners will replace or repair other defective components in each unit. These "balance of plant" repairs will be undertaken starting in 2024. Table 4 presents the Owners' damages valued as of June 30, 2025 by major unit component that flow from TAES's deficient performance.⁵⁴ The damages presented are valued as of June 30, 2025, a date approximate to the time the damages could be presented to the trier of fact. The valuation date can be updated to reflect the actual trial date.

⁵³ The minutes of the May 3, 2024 Consumers Board of Directors Meeting contain the Board's approval to complete the current capital plan to replace the DREs as well as make other needed unit repairs required as a result of TAES's failure to perform (CEC-01589756).

⁵⁴ Tables that include damages values in the balance of this Report are as of June 30, 2025.



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Table 4: Financial Damages by Issue as of June 30, 2025

Description	Total Damages
BSD-002, Pony Motor Rotor Cracking & Fretting	\$ [REDACTED]
BSD-004, Unit Excitation System Issues	[REDACTED]
BSD-005, Unit Excitation PPT Supply Wiring	[REDACTED]
BSD-006, Pumping Pole Service Life & Rating Concern	[REDACTED]
BSD-007, Generator Air Cover Cracking	[REDACTED]
BSD-008, Main Shaft Seal	[REDACTED]
BSD-009, Turbine Guide Bearing Damages & Oil Heaters	[REDACTED]
BSD-010, High Pressure Oil System/Thrust Bearing Service Life	[REDACTED]
BSD-012, DRE Cracking and Cavitation and Other Components	[REDACTED]
BSD-013, Oil Leak from Lower Generator Guide Bearing Seal	[REDACTED]
BSD-016, Wicket Gate Thrust Liners/Bushings	[REDACTED]
BSD-017, Wicket Gate Linkage Fretting / Greaseless Bushing Design	[REDACTED]
BSD-018, Unit Brake Track Machining and Shoe Replacement	[REDACTED]
BSD-027, Motor Operated Disconnects	[REDACTED]
BSD-028, Thrust Bearing Oil Cooler Headers and Fouling	[REDACTED]
BSD-038, Failed Generator Air Coolers	[REDACTED]
Unit 5 Runner Crack Repair	[REDACTED]
Subtotal	\$ [REDACTED]
Costs Common to All BSDs	\$ [REDACTED]
Liquidated Damages	13,109,496
Total Damages	\$ 690,086,549

83. Further, to the extent additional or unforeseen equipment and operating challenges arise at individual units, the scope and level of repair, replacement, and monitoring efforts may increase. Consequently, the impact of the changing repair and replacement environment the Owners currently face may necessitate future changes or adjustments be made to the financial damages presented in this Report.⁵⁵
84. The vast majority of the \$690.1 million of damages represent the costs and expenses of the repair, replacements, and monitoring activities performed during each unit's outages. Outages are when the unit is unavailable to produce energy. If unable to operate, the Owners lose the energy or capacity values the units would have generated if not under repair. Table 5 presents the months each unit would be available to operate had TAES

⁵⁵ If it were determined that an additional DRE also requires replacement, we approximate the damages for defects not yet repaired to total a nominal cost of \$912.3 million (\$780.5 million as of June 30, 2025). These amounts are based on the current damages for defects not yet repaired related to Unit 2 and do not include amounts for work performed as of March 31, 2024. See Exhibit L.

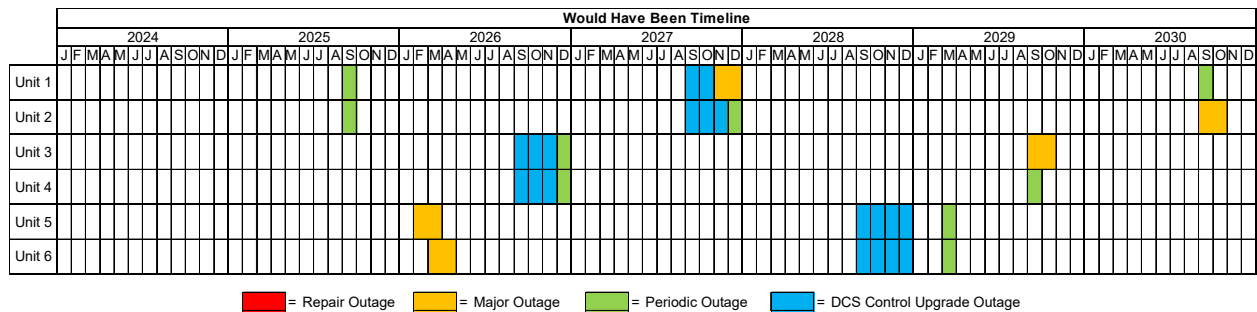


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delivered the units in accordance with the Contract's specifications. Each month without a colored bar is a month that each unit would be operating. The colored bars in Table 5 represent the Contract specified outage frequencies and other Owner planned outages (the blue bars).

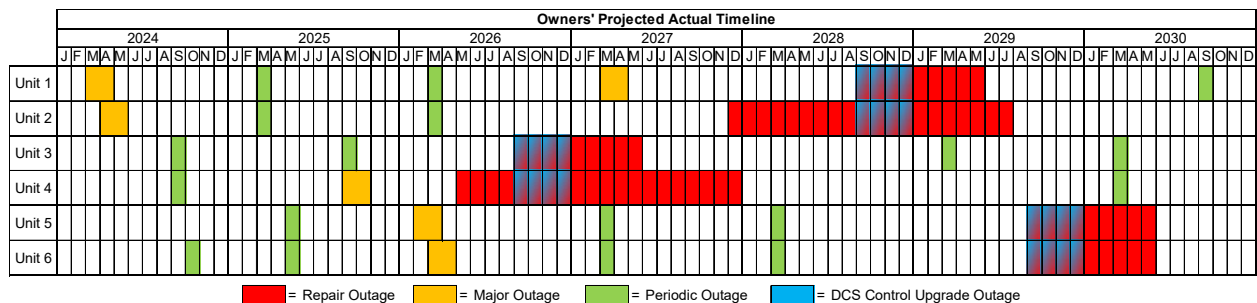
85. As an example, had TAES delivered units completed in accordance with the Contract, Units 1 and 2 would have been the only units with outages in 2024 and 2025 (see two green bars).

Table 5: Would Have Been Timeline



86. Table 6 presents the outages for each unit necessary to repair and replace the defective TAES components and place the units in the condition had TAES performed under the Contract. As an example, in May 2026 Unit 4 will begin a 600-day outage extending to December 2027.

Table 6: Owners' Projected Actual Timeline



IX. QUANTIFICATION OF THE OWNERS' DAMAGES

87. The Owners' damages have been quantified in two categories of losses: (a) costs and expenses the Owner paid during the period from 2017 through March 31, 2024 to address TAES's deficient work and (b) an estimate of the costs and expenses to repair deficient work that has not yet been repaired, and estimates of costs and expenses for ongoing inspections, repair, and other activities necessary to continue the safe and reliable operation of the units.



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A. Quantification of Damages Related to Work Performed As Of March 31, 2024

88. With respect to work already performed, the Owners' damages equal \$21.2 million and represent specific costs and expenses the Owners expended from 2017 through March 31, 2024 to respond to TAES's deficient overhaul work. During this period, the Owners also incurred costs and expenses necessary to respond to continuing post-overhaul operating shortfalls and deficiencies identified subsequent to each unit's overhaul and TAES's departure from the site in July 2022. The damages are presented by BSD in Table 7 and are described by major cost category in the following paragraphs.⁵⁶

Table 7: Summary of Damages for Work Performed as of March 2024 by BSD

Description	Work Performed as of March 2024
BSD-002, Pony Motor Rotor Cracking & Fretting	\$ 1,320,035
BSD-004, Unit Excitation System Issues	88,788
BSD-005, Unit Excitation PPT Supply Wiring	525,017
BSD-006, Pumping Pole Service Life & Rating Concern	2,478,367
BSD-007, Generator Air Cover Cracking	620,477
BSD-008, Main Shaft Seal	1,524,491
BSD-009, Turbine Guide Bearing Damages & Oil Heaters	292,506
BSD-010, High Pressure Oil System/Thrust Bearing Service Life	331,982
BSD-012, DRE Cracking and Cavitation and Other Components	3,142,592
BSD-013, Oil Leak from Lower Generator Guide Bearing Seal	362,461
BSD-016, Wicket Gate Thrust Liners/Bushings	1,243,099
BSD-017, Wicket Gate Linkage Fretting / Greaseless Bushing Design	1,962,221
BSD-018, Unit Brake Track Machining and Shoe Replacement	86,097
BSD-027, Motor Operated Disconnects	748,308
BSD-028, Thrust Bearing Oil Cooler Headers and Fouling	314,843
BSD-038, Failed Generator Air Coolers	346,860
Unit 5 Runner Crack Repair	567,478
Subtotal	\$ 15,955,622
Costs Common to All BSDs	\$ 5,206,584
Total Damages	\$ 21,162,207

1. Owners and Contractor Support Costs for Investigation and Repair

89. The Owners incurred increased costs to maintain, inspect, and perform interim repairs during outages that otherwise would not have been necessary had TAES completed its work

⁵⁶ The amounts are presented in greater detail in Exhibit C to this Report. The amounts included in Exhibit C include estimated costs which are committed through executed SOWs. These amounts will be incurred in 2024.



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in accordance with the Contract. The costs incurred include costs for contractor support, internal CEC labor (engineering, project management, etc.), materials, and corporate costs. Ankura relied upon the work order values to accumulate the amounts recorded to each BSD presenting the costs to complete the scope of the repair work and the period in which the costs were incurred. As an example, the Owners were required to rebuild the pumping poles in the generator circuit breaker (GCBs) that had been designed, supplied, and installed by TAES. The poles were unable to support the service requirements set forth in the Contract. These costs and expenses would have been avoided had TAES installed pumping poles designed to support the unit operations as set forth in the Contract.

90. Additional amounts recorded to PH-80088 reflect labor charges for operations and maintenance personnel at LPS to support the unit repair and replacement efforts for special projects. Costs incurred in March 2024 to investigate the Unit 5 runner crack were specifically tracked and recorded in PH-80088. Other amounts also recorded to PH-80088 reflect common costs to investigate and repair the operating deficiencies with the LPS units.
91. Additional repair work was performed under discrete WBS projects established within SAP.⁵⁷ The accounts were established to capture amounts incurred to repair and replace pumping poles (BSD-006) and thrust bearing pads (BSD-028). Ankura identified the costs associated with these WBS projects amongst data for other discretely tracked LPS maintenance projects. Ankura discussed the WBS projects with knowledgeable LPS personnel to identify those that are incremental due to TAES's performance.

2. Voith Costs for Investigation and Repair

92. Incremental amounts incurred to investigate and repair TAES's deficiencies also include payments to Voith to conduct inspections of the LPS units, perform and support immediate remediation work, and initiate the design and planning of the Voith efforts to remedy the defective work. To account for and control the Voith work, the Owners issued Voith statements of work ("SOW(s)") that defined the scope of the work Voith was to complete.
93. The work performed by Voith included on-site support under SOW-001 during the substantially delayed TAES's Unit 3 outage; execution of temporary repairs during the spring 2023 outage under SOW-002 (warranty repairs TAES should have performed under the Contract); and investigations and inspections of each of the units and the Units 1 and 6

⁵⁷ These WBS Project Numbers are PH-60000, PH-80036, PH-80044, PH-80064, PH-80046, and PH-80053.



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pony motors during the spring 2023 outage under SOW-003.⁵⁸ The charges to each SOW also include the assignment of costs and expenses common to all BSDs. The payments to Voith under SOW-001 to SOW-003 were recorded to SAP account PH-00009.⁵⁹

94. The SAP data provides fields to identify Voith as the contractor and fields identifying the purchase orders under which the amounts were paid and recorded. The purchase orders are linked to the Voith SOWs; thus, Ankura was able to summarize the Voith payments by SOW using the purchase order data provided in SAP. Additional descriptions and breakdowns of Voith's work were provided in Voith's SOWs and invoices. Ankura relied upon these additional descriptions of Voith's work performed to align amounts with the BSDs and issues being experienced by the LPS units by time period. As of March 31, 2024, Voith has charged the Owners approximately \$12.4 million for work performed. Table 8 presents the Owners' increased cost damages by SAP account and the amounts paid to Voith through March 31, 2024 by SOW.

Table 8: Summary of Costs for Work Performed as of March 2024 by Cost Type

Description	Work Performed as of March 2024
<u>Voith Inspection, Planning, and Interim Repair Costs</u>	
SOW-001	\$ 851,854
SOW-002	4,254,945
SOW-003	879,188
SOW-004	3,725,741
SOW-006	2,657,200
Subtotal	\$ 12,368,927
PH-00119, Warranty Project	\$ 7,010,852
PH-80088, Warranty Project O&M Support	156,584
Plant Capital Projects	1,625,844
Total	\$ 21,162,207

⁵⁸ CEC-00929350, CEC-01214459, and CEC-01568764.

⁵⁹ The SAP data for PH-00009 also includes accruals for work to be performed in March 2024. Ankura has relied upon these accruals to reflect amounts incurred as of March 2024.



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B. Quantification of Damages Related to Defects Not Yet Repaired

95. As discussed in prior sections, the Owners have experienced financial damages due to TAES's defective overhaul work which will require permanent and continued repair. These damages are reasonably quantified by reference to the cost and expenses required to repair or replace the TAES defective work and place the Owners in the position they would have been had TAES performed its obligations under the Contract.
96. The damages discussed in this section represent the amounts required to replace Units 2 and 4's DR and DREs and repair other components and equipment across each LPS unit. The damages in this section also represent costs and expenses the Owners would avoid had TAES completed its work as called for under the Contract, including increased costs to perform additional annual inspections (along with any remedial work) in lieu of the immediate replacement of other defective LPS unit components.
97. To quantify the damages, Ankura completed a quantification of the costs to repair TAES's defective work and perform additional per unit monitoring as compared to the costs the Owners would have incurred had TAES performed the overhauls in accordance with the Contract. The comparison of the estimates measures the financial losses and damages the Owners have experienced and will continue to experience from TAES's performance failures. Table 9 presents a summary of those financial losses and damages. The quantification and measurement of the categories of damages claimed are discussed in the following Report sections.⁶⁰

⁶⁰ The amounts are presented in greater detail in Exhibit D to this Report.



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Table 9: Summary of Damages for TAES Defects Not Yet Repaired by BSD

Description	Total Not Yet Repaired
<u>Increased Costs to Repair and Replace TAES Defects</u>	
Voith Contract Costs	
BSD-002, Pony Motor Rotor Cracking & Fretting	\$ [REDACTED]
BSD-005, Unit Excitation PPT Supply Wiring	[REDACTED]
BSD-008, Main Shaft Seal	[REDACTED]
BSD-009, Turbine Guide Bearing Damages & Oil Heaters	[REDACTED]
BSD-010, High Pressure Oil System/Thrust Bearing Service Life	[REDACTED]
BSD-012, DRE Cracking and Cavitation and Other Components	[REDACTED]
BSD-013, Oil Leak from Lower Generator Guide Bearing Seal	[REDACTED]
BSD-016, Wicket Gate Thrust Liners/Bushings	[REDACTED]
BSD-017, Wicket Gate Linkage Fretting / Greaseless Bushing Design	[REDACTED]
Subtotal	\$ [REDACTED]
Other Contract Costs to Repair and Replace TAES Defects	
BSD-027, Motor Operated Disconnects	\$ 3,830,240
Subtotal - Increased Costs to Repair TAES Defects	\$ 481,073,934
<u>Increased Monitoring, Inspection, and Repair Costs</u>	
BSD-012, DRE Cracking and Cavitation and Other Components	\$ 64,193,759
BSD-006, Pumping Pole Service Life & Rating Concern	6,998,632
Subtotal - Increased Monitoring, Inspection, and Repair Costs	\$ 71,192,391
Increased Owners Costs and Project Support	\$ 103,548,522
Total	\$ 655,814,846

1. Quantification of the Immediate Repair and Replacement Costs
98. The overhaul costs and expenses to replace and repair critical operating components throughout the LPS units, as well as continue to investigate and resolve ongoing risks of operations in each unit, fall under different cost and expense categories. As the Owners continue to evaluate the ongoing damage to each unit and to the extent additional or extended scopes of repair work are required, this Report may understate the total replacement and repair costs necessary to resolve TAES's deficient overhaul performance.
99. The current scopes of overhaul, repair, and equipment replacement activities anticipated for each unit provide the foundation for the identification of the costs and expenses summarized in Table 9 above. We first used estimates prepared by Voith for the performance of the overhaul repair and replacement activities and then performed certain adjustments to those



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estimates as described below. The estimates represent the major maintenance and equipment replacement plans, including the complete redesign, fabrication, and replacement of Unit 4 and Unit 2 DREs. In addition, these scopes of work include the refurbishment and replacement of other major operating components, termed "balance of plant" equipment that will be corrected in Units 2 and 4 and in Units 5, 6, 1, and 3.

100. The Owners remain alert to the potential that the continued operation of the other units that contain a TAES-installed DRE may require repair or replacement. Also, the degradation of other major equipment components, such as the Unit 5 runner cracking, were observed for the first time recently and may also require repair or replacement during future outages.⁶¹ Therefore, the Owners are increasing the frequency of their inspection and monitoring activities at each unit to identify major component or other potential equipment failures to avoid any catastrophic results.
101. The Owners have started planning and scheduling the Unit 4 and Unit 2 DRE replacement activities, the balance of plant replacement and repair work, and all other work that can be efficiently completed during the DRE-related outages. The Owners have also developed a plan and schedule for the balance of plant work at each unit currently not requiring an immediate DRE or other turbine component replacement.
102. The timing and durations of this work are presented in greater detail in Exhibit G. For those units in which the DRE is not replaced, monitoring, and inspection outages are planned as presented in the expanded outage tables presented in Exhibit G.
103. The Owners have also developed plans and work schedules should additional outage or repair work at the units be needed during or subsequent to the current overhaul and repair outages. The processes for determining the costs and expenses necessary to complete the overhaul, replacement and repair of defective TAES-supplied equipment are presented in the following paragraphs.

2. The Voith Overhaul, Replacement and Repair Estimates

104. Voith began inspections of the units during the Spring 2023 outages specifically to develop the scopes of work necessary to rectify TAES's defective work and meet the Owners' Plant operating and performance objectives consistent with the Contract. Voith also developed and provided to the Owners the estimated costs and expenses to perform the necessary

⁶¹ The Owners are in the process of evaluating the implementation of annual inspection of the runners in each unit to monitor for potential cracking.



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scopes of work and schedule for completion of that work as detailed in the “100% Combined Task Order Proposal” submitted to the Owners and dated May 15, 2024 (the “Voith Estimate”).⁶² The Voith Estimate is also based on the terms and conditions set forth in the August 2021 Voith Contract, as updated via draft Contract Change Order 2.⁶³

105. Voith has prepared the Voith Estimate based upon the technical scope defined in the Owners’ BSDs.⁶⁴ The Voith Estimate outlines activities to be completed by Voith to repair defects and support the repair and replacement of plant components and equipment necessary for each unit to reach the stated 30-year service life stated in the Contract. Voith will be responsible for designing, engineering, procuring, and manufacturing the replacement components and equipment; transporting the replacement components and equipment to site; and, managing the disassembly, installation, and assembly activities across the LPS units.
106. Ankura has reviewed the components of the Voith Estimate and the related BSDs, the detailed cost estimates, the cost estimate workbooks, all supporting materials, and the detailed project schedules. Members of Ankura discussed the Voith Estimate at length with the Owners’ personnel, including the process the Owners followed when approving Voith to perform the proposed overhaul, replacement, and repair work. Ankura also had discussions with Voith’s personnel to gain an understanding of the methodologies followed in developing the Voith Estimate, project schedules, and their approach to completing the work.
107. Ankura relied upon these cost estimates and schedule durations to determine the amount and timing of Voith’s overhaul and repair costs and expenses to be incurred. Figure 1 below presents a summary of the Voith Estimate.

⁶² CEC-01590124 and CEC-01590253.

⁶³ The Owners and Voith anticipate Change Order 2 will be executed July 1, 2024, consistent with the Owners’ management approval processes.

⁶⁴ CEC-01590124, p. 5.



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Figure 1: Voith Estimate As Provided

Allowances - 2x Long Outages														
	U4				U5		U2		U1		U6		U8	
	2024	2025	2026	2027	2028	2027	2028	2029	2028	2029	2029	2030	2029	2030
Voith Site Staff														
Craft Labor														
Site Equipment														
Engineering (Product Design)														
Office Staff (i.e. PMr, Msr, QA, FS, Lead Eng.)														
Expenses														
Material and Manufacturing														
Transportation														
Total Time and Material Price per Unit and per Year (USD)														
Total Time and Material Price per Unit (USD)														
Time and Material Not to Exceed Factor per Unit (USD)														
Total Time and Material Price per Unit with NTE (USD)														
Lump Sum Scope (USD)														
Estimated Total Price per Unit with NTE (USD)														

108. Ankura reviewed the Voith Estimate by period, LPS unit, BSD, and cost type. Ankura adjusted the Voith Estimate to account for scopes of work and costs that do not directly relate to work performed by TAES and to ensure the outage durations assumed in the Voith Estimate are consistent with the CEC's current duration for the units.
109. Voith is currently in its schedule optimization process and reviewing specific potential schedule efficiencies with CEC. As a result, we have adjusted the Voith Estimate to reflect the timelines presented in Exhibit G and Figure 1 above. Table 10 reflects the Voith Estimate as adjusted. These amounts represent costs to respond to TAES's defective work. The expenditure of these costs and expenses would have been avoided by the Owners had TAES properly performed the work pursuant to the Contract.

Table 10: Voith Estimate (As Adjusted)

Cost Type	Unit 4	Unit 3	Unit 2	Unit 1	Unit 5	Unit 6	Total
Voith Site Staff							
Craft Labor							
Site Equipment							
Engineering							
Office Staff							
Expenses							
Material and Manufacturing							
Transportation							
Lump Sum Estimate							
Total							

110. Finally, Ankura has tested the reasonableness of the Voith Estimate for determining the Owners damages in this matter. Ankura performed multiple independent analyses to estimate certain cost categories that overlap with those included in the Voith Estimate. These analyses are discussed in greater detail in Section IX.C below.

**Expert Report of Michael P. Emmert***June 14, 2024***3. Quantification of Increased Monitoring, Inspection, and Repair Costs**

111. In addition to Voith's overhaul and repair work to be performed, the damages presented include costs in connection with incremental outages to inspect and repair the units prior to and subsequent to the Voith overhaul work. For Units 1, 5, 6, and 3, the Owners have currently determined that the replacement of the TAES-supplied DR and DRE is not necessary in the near term. However, certain cracks and other defects persist in those components in each unit which will require attention. Additionally, the Owners recently discovered and repaired cracking in the Unit 5 runner, which shares the same design and fabrication method as the runners in the other five units. The Owners will continue to incur increased contractor costs to perform monitoring and evaluation of those components and perform the critical repairs consistent with recent repairs to other DRE and runner issues. The cost and expenses to complete these necessary activities in lieu of currently replacing each unit's DR, DRE or other component deficiencies, total \$71.2 million for the 30-year operations of the three units through 2053.
112. Ankura has quantified these increased costs based on a comparison of the contractor and Owners' costs that will be incurred, to the costs that would have been incurred had TAES performed under the Contract.

i. Monitoring Costs for the LPS Units

113. Incremental monitoring and inspection outages cost \$64.2 million from 2024 to 2053 based on a comparison of the non-breach scenario to the actual scenario. Ankura compared the actual and "would have been" periodic and major outages for the LPS units. In the non-breach scenario, the Owners would incur contractor costs to access plant areas for LPS operators to perform periodic outage activities such as filter changes every three years. The "would have been" costs were provided in a quote from Northern Boiler and are included in the "would have been" estimate for every periodic and major outage scheduled through 2053.
114. In the actual scenario, contractor support will be required on an annual basis to install the draft tube platforms in the units to support DRE and runner inspection activities. In addition, costs have been included to perform planned and critical repair work related to TAES defects every third year during major outages for those units. These costs have been estimated based upon Voith charges to perform repair and critical work during past outages.



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ii. Increased Pumping Pole Maintenance

115. The Owners' will also incur \$7.0 million between 2024 and 2053 to rebuild the pumping poles within the generator circuit breakers at a greater frequency than defined in the Contract. The pumping poles in the units will be rebuilt after 950 cycles compared to the 2,190 cycles defined in the Contract.⁶⁵ Ankura applied the same assumptions for the operation of the LPS units and costs to rebuild the poles for both the actual and "would have been" calculations (i.e., the only difference in the two scenarios is the frequency of repair).

4. Quantification of the Increased Owners' Costs and Project Support Costs

116. The Owners' LPS Project Management Organization (the "PMO") assists with operations and maintenance of the units. The PMO performs the majority of daily operating maintenance and outage activities. This PMO will now also be required to support the Voith overhaul work, as they did during the TAES overhaul. The PMO will experience increased monitoring, inspection, and repair activities resulting in the Owners' expending increased cost and expenses for that Organization, in addition to outside engineering services, direct contractor support for discrete and specialized scopes of work, and corporate-wide costs and expense for providing corporate operating services and support.

i. Owners' Project Management Organization

117. The PMO is comprised of CEC and DTE employees performing activities such as engineering, project controls and documentation management, project scheduling and budgeting, operating procedures creation and drafting, and project quality engineering, and includes support from plant managers, operators, and crews. The PMO will incur project management costs to support the additional inspections of the LPS units prior to Voith's overhauls; re-engineering, re-procurement, and re-installation of impacted components during the Voith overhaul outages; and, monitoring outages for those units currently not scheduled for an overhaul.

118. The current PMO leadership updated the PMO structure to identify the additional PMO roles necessary to support the Voith overhaul, increased monitoring outages and other expanded activities. With respect to the Voith overhauls, specific roles and activities were identified in the PMO areas such as pre-outage planning and engineering, interim repair and outage

⁶⁵ The assumptions for the pumping poles in the LPS units are based on the analysis performed by other experts and related conversations.



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support, mobilization for the repair overhaul outage for each unit, repair overhaul outage support, and demobilization. The amount of time for each PMO role was then developed based on estimating the percentage of each PMO member's time dedicated to the specific area(s) of PMO responsibility. These activity levels were individually estimated on a monthly basis from 2024 to 2053 based upon the level of support necessary to support the interim repairs, inspections, and repair overhauls. An hourly rate was applied to the total monthly hours by year to determine the annual PMO costs and expenses incurred. These annual PMO costs will continue to be the basis for the Owners' financial management and reporting of the performance of the LPS.

119. With the assistance of current PMO personnel, Ankura applied the same methodology to estimate the PMO headcount, activities and costs and expenses the Owners would have incurred for the necessary annual, periodic, and major outages provided for in the Contract had TAES completed its overhaul and delivered operating units in accordance with the Contract terms. Table 11 presents the damages related to increased project management organization costs.

Table 11: Owners' Project Management Organization by Period

Description	Pre-Repair Outage	Repair Outage	Post-Repair Outage	Total Damages
	2024 - 2026	2026 - 2030	2030 - 2053	
<u>Actual Project Management Organization</u>				
Repair Outage Planning	\$ 5,560,651	\$ -	\$ -	\$ 5,560,651
Repair Outage Support	-	34,760,395		34,760,395
Monitoring, Inspection, and Repair Support	3,514,728	-	31,557,037	35,071,766
Total Actual Project Management Organization	\$ 9,075,379	\$ 34,760,395	\$ 31,557,037	\$ 75,392,811
<u>Would Have Been Project Management Organization</u>				
	\$ 2,953,136	\$ 5,174,983	\$ 20,921,002	\$ 29,049,122
Increased Project Management Organization Costs	\$ 6,122,243	\$ 29,585,411	\$ 10,636,035	\$ 46,343,690

ii. Owners' Engineer

120. As is customary in any large construction, repair, or maintenance project the Owners will retain an independent engineering firm as an advisor to assist in the evaluation of Voith's proposed project activities. The independent engineering firm's role during the repair and replacement overhauls will be more limited than the roles fulfilled during the TAES's initial overhauls due to the build-out of the Owners' project management and engineering function to support Voith's work. The Owners will incur \$3.6 million for an Owners' engineer based on the amounts paid during the TAES overhaul.



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iii. Commissioning Support

121. The Owners will incur \$2.9 million to retain an experienced commissioning contractor to support the commissioning activities of Voith's overhaul. American Electrical Testing, J. Givoo Consultants, Inc., and Soil and Materials Engineers, Inc. will provide start up, testing, and inspection services during each unit's commissioning.

iv. Corporate Costs Assigned to LPS

122. The size, cost, and complexity of the planned major equipment replacement work to be performed by Voith with the assistance of Owners' personnel has and will result in additional costs and expenses being incurred or diverted from other management and normal course of business activities supporting operations across CEC and DTE.
123. These costs and expenses totaling \$50.7 million are incurred on a corporate-wide basis and are assigned to the Plant and its operations in the normal course of the Owners' financial reporting practices and procedures. As an example, costs and expenses were identified and recorded during TAES's overhauls and are included in the actual costs and financial losses presented.
124. Ankura discussed the types of costs and expenses that are included in the Owners' corporate costs, and the practices and procedures followed to assign amounts to the Plant accounts, with accounting, financial reporting, and Plant personnel. The amounts assigned represent proper costs and expenses for supporting the Voith Project work as well as the ongoing operations of the Plant.

C. The Reasonableness of the Voith Labor Cost Estimate

125. To evaluate the reasonableness of the Voith estimates of labor costs to complete the replacement and/or repair of defective components supplied by TAES, Ankura compared the Voith estimate to TAES's reported levels of effort when performing the overhauls. As presented in Table 12 after making appropriate adjustments to the TAES reported craft labor hours and costs to estimate the scopes of work to be re-performed under the Voith scopes of work, TAES's performance-based value closely approximates the Voith prepared estimate for their scopes of work.



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Table 12: Comparison of the Voith and Ankura Unit 4 Craft Labor Estimates

Unit 4 Craft Labor Estimate Comparison	
Description	Amount
<u>Voith Estimate</u>	
Estimated Hours	434,033
Estimated Costs	\$ 51,150,412
<u>Ankura Estimate (Based on TAES Schedule)</u>	
Estimated Hours	408,672
Variance from Voith Estimate	-6.2%
Estimated Costs	\$ 49,330,842
Variance from Voith Estimate	-3.7%

126. To convert the TAES actual hours incurred to align with the Voith scopes of work, Ankura completed a study of TAES's craft labor activities. Based on TAES's final construction schedule for Unit 1, we discussed and identified those schedule activities actually performed by TAES that would be necessary to complete Voith's scope of work. Over 1,300 activities were specifically reviewed.
127. Unit 1 was selected because that unit was completed most closely to its estimated schedule date. Unit 1 was the fifth unit outage completed by TAES and the most mature in terms of project definition and refinement. The Unit 1 outage was also completed under the fixed priced contract structure that was established through Change Order #9. Unit 1 was also the last unit completed by TAES prior to the discovery of the DR and DRE issues that led to the lengthy DRE replacement for Unit 3.
128. To estimate the hours to be incurred across the units, TAES's Unit 1 budgeted hours were evaluated by activity to determine the level of effort across the numerous disassembly, refurbishment, and assembly activities. For those activities, we compared each activity's budgeted labor hours, embedded in the various iterations of TAES's construction schedules, to TAES's total budgeted labor hours and then applied that percentage of budgeted labor hours to TAES's total actual hours (337,000) to estimate the actual hours that would have been spent by TAES for the selected activity. This multi-step process was necessary because TAES did not report to the Owners the actual total hours expended by project activities.⁶⁶

⁶⁶ TAES's earned hours are based upon budgeted not actual hours. Therefore, the earned hours do not represent the total effort required to perform the re-overhaul activities. The hours incurred for Unit 1 were reported by TAES to be 337,486 hours in total (but without a breakdown at any level of activity).



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129. The total hours to be incurred were divided by the total outage days to determine the average labor hours per day spent on repair activities. The average hours were multiplied by the estimated future outage length to determine the total hours per unit, respectively. The total hours per unit were then multiplied by a contingency rate to capture additional efforts to perform the outage by Voith compared to TAES, resulting in the total estimated hours per unit.
130. The estimated hours per unit were allocated across the repair activities. Consistent with the TAES overhaul, Voith will utilize union craft labor from local union halls to complete the overhaul warranty repair outages.⁶⁷ The hours per activity were then multiplied by the blended union crew rate to determine the estimate labor costs, to which the [REDACTED] markup defined in the Voith contract for craft labor was applied, resulting in the total estimated costs for craft labor by unit.⁶⁸

D. Liquidated Damages

131. The damages presented also include the value of contract liquidated damages TAES has failed to pay to the Owners. The liquidated damages provision of the Contract sets forth the process and considerations for the determination of delay related damages caused by events and circumstances that extended a unit's as-built UIA date beyond the Contract as-planned date. This extension of time can result in increases in the Owners' time related costs.⁶⁹
132. Section IV of the TAES Contract, "Contract Price," contains the liquidated damages provision. This provision was superseded by the Revision to Section IV, Contract in Contract Change Order 9 which included the following:

Table 13: Liquidated Damages⁷⁰

Unit	Expert Report of John Byrne						Calculation of Liquidated Damages				
	UIA Target Date	UIA Milestone Date Deadband	Actual UIA	Total Delay Subject to LDs	Excusable Delay	Adjusted Delay to UIA	Unit Fixed Price	Unit Limit	LD Daily Rate	Calculated LDs	Final LDs
Unit 6	27-Feb-18	19-Mar-18	18-May-18	60.0	(22.5)	37.5	\$87,970,976	\$ 8,797,098	\$ 50,000	\$ 1,875,000	\$ 1,875,000
Unit 1	18-Apr-19	8-May-19	26-Jun-19	49.0	(12.0)	37.0	\$89,657,650	\$ 8,965,765	\$ 50,000	\$ 1,850,000	\$ 1,850,000
Unit 3	9-Apr-20	29-Apr-20	2-Apr-22	703.0	(82.0)	621.0	\$93,844,962	\$ 9,384,496	\$ 50,000	\$ 31,050,000	\$ 9,384,496
Total						695.5		\$ 27,147,359		\$ 34,775,000	\$ 13,109,496

⁶⁷ Trades to be utilized include millwrights, carpenters, crane operators, boilermakers, laborers, and pipefitters.

⁶⁸ See Exhibit H for the assumptions and calculations underlying the blended crew rate which is based upon the unique rates by trade and shift, along with the assumed crew mix across the various trades.

⁶⁹ The amounts are presented in greater detail in Exhibit E to this Report.

⁷⁰ Byrne Report, Section IX.



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X. THE ECONOMIC BASIS FOR THE OWNERS' COURSE OF ACTION TO CORRECT TAES'S OVERHAUL PERFORMANCE DEFICIENCIES

133. The LPS units delivered by TAES have not met the Contract's specifications. In addition, the costs of operating the plant have exceeded the costs the Owners expected based on the contract terms. Without making significant capital improvements to each unit, to place each unit in an operating condition had TAES performed under the Contract, these losses will continue to reduce the immediate and long-term value of the units to the Owners.
134. To avoid further financial losses, the Owners are completing the Voith overhaul as described in Section IX. The Voith overhaul is an expensive undertaking that would not be necessary had TAES completed its obligations consistent with the Contract.
135. The Owners' plans are financially justified. The Owners have quantified the potential losses they and their customers will suffer if Toshiba's defective work is not repaired as currently planned.⁷¹ The Owners' quantification is presented in the expert report of Ms. Sarah T. Walz, Director of Supply Planning for CEC (the "Walz Report"). The contents and results of her report clearly demonstrate the importance of the future value of the LPS units to the Owners and the reasonableness of the Owners' decisions to repair, replace, refurbish and continuously monitor the components of each of the LPS units.
136. The Walz Report contains four different scenarios developed with the assistance of LPS and Ankura personnel. Each scenario quantifies the lost values for the period of June 2024 through December 2033.
137. To complete the scenarios, Ms. Walz relied on the CEC models she and others in the Company use in the normal course of managing and operating the Company's electricity supply, capacity, dispatch and other planning activities. Ms. Walz's daily responsibilities assist CEC with the efficient and cost effective daily delivery of energy and capacity values to MISO.⁷² These models are also relied on to support CEC's reporting of energy delivery and operating performance data to its regulators and others.
138. The first scenario is based on the projected performance of the Plant based on the current plan to replace the DR and DRE's in Units 4 and 2 while annually monitoring the DR's,

⁷¹ Members of the Ankura team have significant experience with electric utility economic and dispatch models used by electric utility companies in the daily management of their power generation, delivery, and financial decision-making activities.

⁷² MISO is the abbreviation for the Midcontinent Independent System Operator, the independent organization that determines the value and quantify of energy or capacity availability CEC and DTE provide to the MISO energy market on an hourly and daily basis.



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DRE's and other major components in the other four units.⁷³ In this scenario, each unit is offline for 600 days, the estimated length of the Voith repair.

139. The second scenario assumes a decision not to replace the Unit 4 and Unit 2 DREs, which leads to a failure condition that makes Unit 4 inoperable beginning in 2027 and the unit entering an immediate unplanned outage.⁷⁴ Unit 2 is assumed inoperable beginning in 2029 when it also enters an unplanned outage. In this scenario, both DREs are replaced during outages lasting 1,400 days for Unit 4 and 1,269 days for Unit 2.⁷⁵ As shown in Chart 1 that follows, the financial impact of replacing the DRE's in an unplanned outage instead of in a planned outage, as assumed in scenario 1, results in incremental financial losses of over \$276 million.
140. The third scenario also assumes that the Unit 4 and Unit 2 DRE's are not replaced in a planned outage but those units continue operating until Unit 4 becomes inoperable in 2027 and enters an unplanned outage for DRE replacement.⁷⁶ Operation of Unit 2 is halted and remains off-line through its DRE replacement outage that is completed in January of 2033. The unplanned outage for Unit 4 is assumed to be 1,400 days, while the unplanned outage for Unit 2 is assumed to be 2,000 days. The additional 600 outage days assumed for Unit 2 reflects the assumption that only one LPS unit can be overhauled at a time. The incremental financial losses that occur in this scenario total \$379.8 million.
141. The fourth scenario contains the same unit inoperability and outage assumptions as in scenario 2 (Unit 4 in 2027 and Unit 2 in 2029), but instead of replacing each DRE, the two units are retired.⁷⁷ The assumption that 710 megawatts of 8-hour lithium-ion battery capacity would be constructed to replace the two units at a total cost of \$1.8 billion is used to quantify the value of this scenario.⁷⁸ The financial impact of this scenario is \$2.1 billion, which includes \$280 million of incremental energy and capacity losses as well as the \$1.8 billion of the replacement battery construction. These totals are also presented in Charts 1 and 2.⁷⁹

⁷³ Each scenario assumes that the four units, other than Units 2 and 4, are monitored annually to assess DR, DRE and other major components for defect progression.

⁷⁴ The second scenario discussed here, is Scenario 2A in the Walz Report.

⁷⁵ The number of outage days estimated for scenarios two through four were estimated with the assistance of Ludington personnel. The increase in outage days to 1,400 reflects the additional days to perform the numerous activities to prepare for the outage, including identifying, selecting and contracting with a qualified contractor and other activities. The 1,269 day duration reflects that some planning and other activities would not necessarily be needed for the second unit outage.

⁷⁶ The third scenario discussed here, is Scenario 2B in the Walz Report.

⁷⁷ The fourth scenario discussed here, is Scenario 3 in the Walz Report.

⁷⁸ The calculation of the \$1.8 billion battery capacity is detailed in the Walz Report.

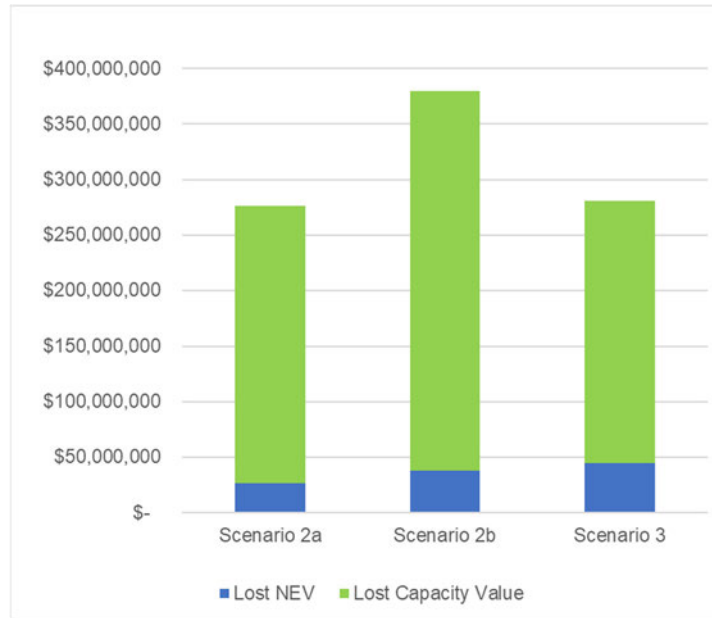
⁷⁹ The construction of the ion battery replacement capacity results in the reduced energy and capacity value in Scenario 3.



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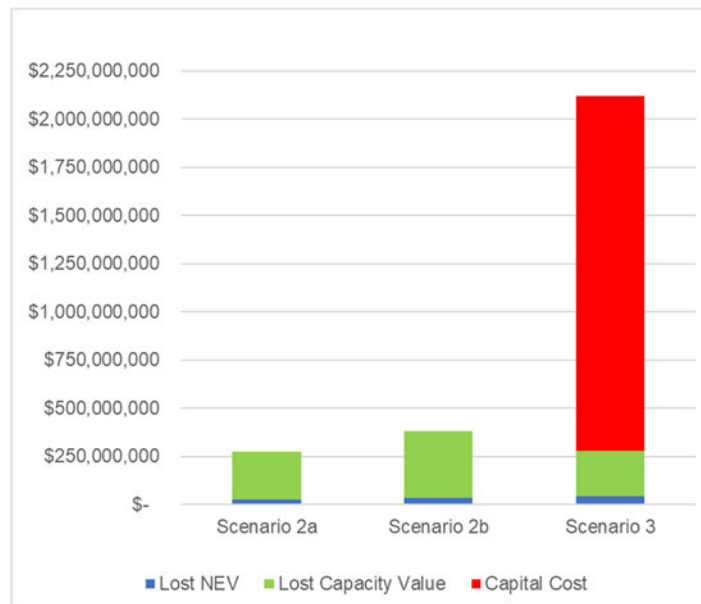
June 14, 2024

Chart 1: Summary of Incremental Lost Energy and Capacity Values



142. Chart 2 includes the ion battery replacement megawatt capital costs contained in scenario 3 of the Walz Report.

Chart 2: Incremental Lost Energy and Capacity Values with Scenario 3 Capital Cost



143. The significant increase in the costs for the Owners to meet their customers' energy needs assuming the Unit 4 and Unit 2 DREs are not replaced as currently planned demonstrates the reasonableness of the Owners' plan, and the financial losses the Owners and their customers could bear if the current replacement plan were to be abandoned.



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144. Should the continued uncertainty of the potential for further DRE or other major component degradation in units 1, 5 and 6 result and require future overhaul, replacement or repair, the lost values presented under the three scenarios would increase at the rate of severity of the equipment failures or other challenges the Owners would continue to face. As an example, if another DRE was to fail during operation (similar to the second scenario) the overhaul and replacement of the DRE would result in as much lost value, if not more, than the lost value presented from the Unit 2 failure.

XI. PRESENTING THE DAMAGES VALUES AS OF A POTENTIAL TRIAL DATE

145. The damages presented and claimed in this Report are valued as of June 30, 2025, a date approximate to the time the damages could be presented to the trier of fact. Damage amounts for work performed and amounts paid as of March 31, 2024 are included in the damages claim at their nominal value, that is the actual dollar values paid by the Owners. Damages amounts related to costs that are yet to be incurred and estimated in 2024 dollars are assumed to be incurred as of December 31, 2024 and are also presented at their nominal value as of June 30, 2025.
146. Damages estimated by reference to repairs and other activities not yet undertaken, such as the Voith repair and replacement costs and expenses and the Owners' monitoring costs for all the units have been estimated from 2025 through 2053 using 2024 cost and expense rates. Those damages have been escalated for six months to June 30, 2025 to reflect their values as of that date.

XII. THE DAMAGES ARE QUANTIFIED TO A REASONABLE DEGREE OF FINANCIAL CERTAINTY

147. The damages presented in this Report have been determined to a reasonable degree of financial certainty. In addition, the damages have been quantified based on the necessary repair and replacement activities to correct TAES' deficient performance for specific unit components or other deficient unit operating conditions.
148. Damages related to costs already paid are dollars the Owners have paid to contractors, engineers, consultants, and others to maintain the operability of each unit and investigate, repair or replace the defective and deficient TAES overhaul work. The damages also include the increased Owners' costs that would have been avoided to support the repair and replacement activities of the units.



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149. Damages related to repairs and inspections not yet undertaken are primarily the increased costs and expenses to the Owners to continue to investigate, refurbish, and replace the deficient TAES overhaul work for each unit to deliver, as close as possible, the performance provided for in the TAES Contract. This damages category is also based on the continued, ongoing risk and uncertainty of unit non-performance, requiring frequent inspections, performance assessments, and repairs to maintain safe and reliable operations. The years of Owner experience responding to the past defective performance of the units provides a sound foundation for the quantification of these damages. All estimates have been adjusted for the costs and expenses the Owners would have expended had the overhauled units operated as set forth in the TAES Contract.
150. Finally, the study of alternative outcomes to the Owners' current decision to complete major repairs to the Unit 4 and Unit 2 DREs financially demonstrates the reasonableness of the Owners' repair and replacement decisions to reduce the ongoing risk of continued equipment failures and extended unit unavailability.

XIII. CONTRACT LIMITATION OF RECOVERABLE DAMAGES

151. Section GC28 of the TAES Contract contains limitation of liability provisions. I do not opine on the applicability of any such provision to any particular claim or type of damage or recovery, but I calculate the values described in those provisions as set out below.
152. The limitation of liability provisions describe a total figure and a per-unit figure. We have calculated total figure as \$615.9 million based on the final total Contract price of \$561.9 million and certain bonuses.⁸⁰ The per-unit amounts are based on the final contract value of each unit plus applicable bonuses. Table 14 presents the final contract value for each LPS unit and the individual per-unit limitation.⁸¹

Table 14: "Liability Limit" by Unit

Description	Unit 2	Unit 4	Unit 5	Unit 6	Unit 1	Unit 3	Per Unit Total	Total "Liability Limit"
Final Contract Price	\$ 122,684,660	\$ 82,572,299	\$ 85,157,752	\$ 87,970,976	\$ 89,657,650	\$ 93,844,962		\$ 561,888,299
Double Contract Price	\$ 245,369,320	\$ 165,144,598	\$ 170,315,504					\$ -
Maximum Bonus	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000		54,000,000
Total "Liability Limit"	\$ 254,369,320	\$ 174,144,598	\$ 179,315,504	\$ 96,970,976	\$ 98,657,650	\$ 102,844,962	\$ 906,303,010	\$ 615,888,299

⁸⁰ The final contract price includes \$2,697,738 of PCOs subsequent to Contract Change Order 10, which included a price of \$559,190,561.

⁸¹ Exhibit A of this report contains the calculations of the per unit amounts.



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June 14, 2024

XIV. THE APPLICATION OF PRE-JUDGEMENT INTEREST TO THE DAMAGES CLAIMED

153. I have been asked to perform a preliminary calculation of prejudgment interest, recognizing that the actual calculation will be performed after a judgment is rendered. Section 8 of Section 6013 of Michigan Public Act No. 236 provides for interest on a money judgement recovered in a civil action to be calculated at 6-month intervals from the date of filing the Complaint at a rate of interest which is equal to 1% plus the average interest rate paid on auctions of 5-year U.S. Treasuries and compounded annually. The current rate of interest is 4.392% and the interest rate at the date of the Complaint (April 20, 2022) was 1.045%.
154. The application of the Michigan pre-judgement interest statute to the Owners' damages as of June 30, 2025 would result in a total value of \$820.2 million assuming the money judgement is awarded on December 31, 2025.⁸²

XV. THE OWNERS' LITIGATION FEES & EXPENSES

155. A Parent Guaranty executed by Toshiba Corporation in favor of the Owners provides that, under certain circumstances, Toshiba Corporation shall pay the Owners' "reasonable costs, expenses and attorney fees incurred in enforcing [their] rights under the Contract and/or this Guaranty."⁸³ The Owners requested our preliminary tabulation of the litigation fees and expenses the Owners had paid to their lawyers, consultants, information management consultants, advisors, experts and others, to be updated before trial. We tabulated those expenditures as \$20.9 million to date, as detailed in Exhibit I of this report.

XVI. CONCLUSION AND OPINIONS

156. In my opinion, the \$690.1 million of Owners' damages described and presented in this Report represent the costs and expenses to respond to the TAES defects and repair the six LPS units to place each unit in the same operating and performance condition had TAES completed its work in accordance with the Contract. The damages have been quantified following a well-accepted, tested, and proven damages methodology based upon well documented, reliable, and sound assumptions. Our approach and the resulting damages are based on the information and data available to Ankura. To the extent additional or modified information comes to our attention that may have a bearing on the results, inclusions and opinions presented in this Report, Ankura will evaluate the relevance, quality,

⁸² The amounts are presented in greater detail in Exhibit J to this Report.

⁸³ Parent Guaranty ¶ 2.



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and dependability of such information for further consideration. Finally, the \$690.1 million of repair, replacement, and monitoring damages have been quantified to a reasonable degree of financial certainty.

Respectfully submitted,

A handwritten signature in black ink that reads "Michael P. Emmert". The signature is written in a cursive, flowing style.

June 14, 2024

Ludington Pumped Storage Plant
Index of Ankura Appendices and Exhibits

Exhibit	Exhibit Reference	Description
Exhibit A	A	TAES Contract Price
	A.1	TAES Contract Change Orders
	A.1.1	Listing Project Change Notices (PCNs) through CCO 10
	A.2	Listing of Potential Change Orders (PCOs) Subsequent to CCO 10
	A.3	TAES Contract Damages Cap
Exhibit B	B	Summary of Damages
	B.1	Summary of Damages by Period
	B.2	Summary of Damages by Unit
Exhibit C	C.1	Summary of Damages as of March 31, 2024
	C.1.1	Summary of Damages as of March 31, 2024 by Period
	C.1.2	Summary of Damages as of March 31, 2024 by Unit
	C.2	Analysis of Voith SOWs
	C.2.1	Voith SAP Transactions as of March 31, 2024
	C.2.2	Voith Accruals as of March 31, 2024
	C.2.3	Voith Invoice Detail
	C.3	Summary of Warranty Project Damages - WBS PH-00119
	C.3.1	Warranty Project Damages Detail - WBS PH-00119
	C.3.2	Voith Adjustment Detail - WBS PH-00119, Work Order 4103941
	C.4	Warranty Project Damages Detail - WBS PH-80088
	C.5	Plant Capital Projects by WBS Project Number and Period
Exhibit D	D.1	Summary of Damages for Defects Not Yet Repaired by Period - as of June 30, 2025
	D.1.1	Summary of Damages for Defects Not Yet Repaired by Unit - as of June 30, 2025
	D.1.2	Allocation of Support Costs to Units Costs
	D.2	Summary of Voith Contract Cost Damages by Period
	D.2.1	Summary of Voith Contract Cost Damages by Unit
	D.2.2	Voith Contract Cost Damages Detail by BSD, Unit, Cost Type, and Period
	D.2.3	Reconciliation of the Voith Proposal Estimate to Voith Contract Cost Damages
	D.2.4.1 - D.2.4.9	Group Exhibit: Voith Contract Cost Damages Estimate Sheets by BSD
	D.2.5	Voith Contract Cost Damages Estimate Sheet for All BSDs
	D.2.5.1	Voith Contract Cost Damages Estimate Sheet for All BSDs with Escalation
	D.2.6	Voith Lump Sum Price
	D.2.7	Voith Rate Sheet
	D.3	Summary of Other Contract Costs
	D.3.1	Contractor Cost Estimate for BSD-027, Motor Operated Disconnects
	D.4	Increased Contractor Costs for Monitoring, Inspection, and Repairs Related to BSD-012
	D.4.1	Analysis of Incurred Contractor Outage Costs
	D.5	Increased Costs for Monitoring, Inspection, and Repairs Related to BSD-006
	D.5.1	Analysis of Incurred Pumping Pole Maintenance Costs
	D.5.2	SAP Transactions for WBS PH-80064
	D.6	Project Contract Support Estimate

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Exhibit	Exhibit Reference	Description
	D.6.1	SAP Transactions for HDR Michigan, Inc. Purchase Orders
	D.6.2	SAP Transactions for American Electric Testing (AET) Purchase Orders
	D.6.3	SAP Transactions for J. Givoo Consultants, Inc. Purchase Orders
	D.6.4	SAP Transactions for Soil and Materials Engineers, Inc. Purchase Orders
	D.7	Summary of Owners Project Management Organization Costs
	D.7.1	Owners Project Management Organization Costs - Repair Outage Planning
	D.7.2	Owners Project Management Organization Costs - Monitoring, Inspection, and Repair Outage Support (Pre-Repair Outage)
	D.7.3	Owners Project Management Organization Costs - Repair Outage Support
	D.7.4	Owners Project Management Organization Costs - Monitoring, Inspection, and Repair Outage Support (Post-Repair Outage)
	D.7.5	Owners Project Management Organization Costs - Would Have Been
	D.7.6	Estimated Owners Utilization Percentages by Phase
	D.7.7	Owners Charge Rates
	D.7.8	List of U.S. Federal Holidays
	D.8	Owners Project Overhead
Exhibit E	E	Unit Interim Acceptance (UIA) Liquidated Damages by Unit
Exhibit F	F.1	Ecalation - TAES Contract Index A
	F.2	Ecalation - TAES Contract Index B
	F.3	Ecalation - TAES Contract Index C
Exhibit G	G.1	Outage Schedule by Unit - Damages Timeline
	G.2	Outage Schedule by Unit - Would Have Been
Exhibit H	H.1	Reasonableness of the Unit 4 Craft Labor Estimate
	H.1.1	Ankura's Craft Labor Estimate for Unit 4 DRE Repair Outage
	H.1.1.1	Analysis of Craft Labor Construction Activities for Unit Repair by WBS Description
	H.1.1.1.1	TAES Schedule Performance Summary by Activity - Overhaul - 5th Overhaul Unit 1 (5OU1)
	H.1.1.2	Estimated Unit 4 Craft Labor Hours Based on TAES Historical
	H.1.1.2.1	Craft Labor Hour Data from TAES Weekly Project Control Reports
	H.1.1.3	Analysis of Craft Labor Rates and Weighted Average Hourly Crew Rate
	H.1.2	Voith Contract Cost Damages Estimate Sheet for All BSDs
Exhibit I	I	Summary of Litigation Fees To Date
Exhibit J	J	Pre-Judgement Interest
Exhibit L	L.1	Summary of Damages for Defects Not Yet Repaired with Unit 5 BSD-012 Repairs (DRE Replacement) - Nominal
	L.2	Summary of Damages for Defects Not Yet Repaired with Unit 5 BSD-012 Repairs (DRE Replacement) - as of June 30, 2025
Exhibit K	K.1 - K.8	See Exhibit D



Ludington Pumped Storage Plant
Expert Report of Michael P. Emmert



michael.emmert@ankura.com
Chicago, IL
Direct: 312.583.2168
Cell: 630.248.3676

Experience Overview

Michael P. Emmert is a licensed Certified Public Accountant ("CPA"), Certified in Financial Forensics ("CFF") and a Senior Managing Director in the Chicago office of Ankura Consulting Group, LLC. For over 47 years, he has led large complex consulting engagements for Fortune 100 and other companies in numerous industries. He specializes in assisting clients and counsel with the accounting, financial and business aspects of complex business conflicts. As a qualified expert, Michael has completed many complex loss of profits, loss of use and increased cost damages studies in a variety of industries. He has worked on false claims act matters, fraud investigations, financial reporting investigations and other forensic matters, and has broad experience in merger and acquisition disputes, including acting as an arbitrator. Michael has also worked on numerous class-action claim defenses, insurance claims, investment losses, and changed conditions, as other examples of his experiences, all requiring detailed study and analysis of enterprise-wide financial and operating performance as well as specific product or services performance (revenues, costs and expenses, profitability, inventory accounting, etc.).

He has been qualified as an expert witness in federal and state courts, arbitration proceedings (international and domestic), and federal and state regulatory hearings on many different subjects, including damages claim methodologies, damages claim calculations, insurance loss calculations, proper financial statement accounting and reporting, and the proper use of generally accepted accounting principles, as examples. Industries in which Michael has been qualified as an expert include consumer products, manufacturing, industrial products, insurance, construction, environmental, transportation, mining, oil & gas, and utilities.

In addition to leading client service teams, Mike has held numerous leadership positions throughout his career, including as the Managing Partner of Ernst & Young LLP's Global Disputes & Investigations Practice and Navigant's Commercial Litigation Practice.



Ludington Pumped Storage Plant
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Professional Certifications

Certified Public Accountant, State of Illinois
Certified in Financial Forensics

Professional and Other Organizations

Member, American Institute of Certified Public Accountants
Member, Illinois CPA Society
Board Member, Vanderbilt University Masters' in Accountancy Advisory Board
Board Member, Illinois State University College of Business Advisory Board
Associate Member, American Bar Association
Director, United Service Organization Board of Directors
Director, Chicago Legal Aid Society Board of Directors
Trustee and Treasurer, Chicago Zoological Society Board of Trustees
1st Lieutenant, Civil Air Patrol, USAF Auxiliary

Professional History

Navigant Consulting, Inc.
Managing Director
May 2007 to August 2018

Mesirow Financial Consulting
Senior Managing Director and Executive Vice President
October 2005 to May 2007

LECG LLC
Director
April 2004 to September 2005

Ernst & Young, LLP
Managing Partner of Global Investigations and Dispute Advisory
March 1996 to December 2003

Partner
October 1994 to April 2004

Peterson Consulting Limited Partnership
November 1980 to September 1994

Arthur Andersen & Co.
June 1975 to November 1980

Education

Bachelor of Science Accounting, Illinois State University, June 1975



Ludington Pumped Storage Plant
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Expert Testimony

Jurisdiction	Case Identification	Testimony Provided	Subject of Testimony
American Arbitration Association	MCC Holdings Group, LLC dba Midwestern Career College v. Able Technologies, Inc. (et. al.)	Expert Reports, Hearing Testimony	Working capital and damages methodology and quantification.
Illinois Commerce Commission	The Peoples Gas Light and Coke Company, ICC Docket 17-0137	Expert Report and Testimony	Prudence methodologies and quantification.
U.S. District Court for the Middle District of Florida, Tampa Division	Shady Hills Energy Center, LLC v. Seminole Electric Cooperative, Inc.	Expert Report, Deposition, and Supplemental Declaration	Damages methodology, quantification of breach of contract damages
District Court, City and County of Denver, State of Colorado	Antero Treatment LLC v. Veolia Water Technologies, Inc. and Veolia Water North America Operating Services, LLC	Expert Report, Deposition, and Trial Testimony	Damages methodology, quantification of breach of contract damages
Circuit Court of Cook County, IL	Mondelēz International, Inc. v. Zurich American Insurance Company	Expert Report, Deposition, and Hearing Testimony	Damages methodology, quantification of breach of contract damages

Speeches

- “How to Effectively Use Expert Witnesses” (Panel Presentation), 31st Annual Litigation Update Institute, San Antonio, TX, January 2015.

Publications

- “2015 Compendium - Litigation & Alternative Dispute Resolution,” Financier Worldwide (Co-authored).

Exhibit B.2

Ludington Pumped Storage Plant
Summary of Damages by Unit

Description	Total Damages						
	Unit 4	Unit 3	Unit 2	Unit 1	Unit 5	Unit 6	Total
BSD-002, Pony Motor Rotor Cracking & Fretting							
BSD-004, Unit Excitation System Issues							
BSD-005, Unit Excitation PPT Supply Wiring							
BSD-006, Pumping Pole Service Life & Rating Concern							
BSD-007, Generator Air Cover Cracking							
BSD-008, Main Shaft Seal							
BSD-009, Turbine Guide Bearing Damages & Oil Heaters							
BSD-010, High Pressure Oil System/Thrust Bearing Service Life							
BSD-012, DRE Cracking and Cavitation and Other Components							
BSD-013, Oil Leak from Lower Generator Guide Bearing Seal							
BSD-016, Wicket Gate Thrust Liners/Bushings							
BSD-017, Wicket Gate Linkage Fretting / Greaseless Bushing Design							
BSD-018, Unit Brake Track Machining and Shoe Replacement							
BSD-027, Motor Operated Disconnects							
BSD-028, Thrust Bearing Oil Cooler Headers and Fouling							
BSD-038, Failed Generator Air Coolers							
Unit 5 Runner Crack Repair							
Subtotal							
Costs Common to All BSDs							
Subtotal - Increased Cost Damages							
Liquidated Damages	\$ -	\$ 9,384,496	\$ -	\$ 1,850,000	\$ -	\$ 1,875,000	\$ 13,109,496
Total Damages - as of June 30, 2025	\$ 209,933,532	\$ 66,164,651	\$ 199,689,369	\$ 59,206,006	\$ 73,818,873	\$ 81,274,118	\$ 690,086,549
Total Damages - Nominal	\$ 221,526,065	\$ 89,924,715	\$ 218,577,563	\$ 86,177,955	\$ 104,441,857	\$ 112,960,095	\$ 833,608,249

Sources

Exhibit C
Exhibit D
Exhibit E